

ODY BEAUTIFUL! OVER 80 MAXX TRUCK STYLES

page 72

RADIO CONTROL

car action

THE WORLD'S BEST-SELLING RC CAR MAGAZINE

**Living'
Large**

Big Scale
Gas-burnin'
H.A.R.M. RTR



HOW TO
Make your
ready-to-run
ready to race
page 176

**BATTLING 'BOTS
YOU CAN BUILD!**

**SMALL-BLOCK
SCOOP**
Sirio 3.0cc
page 37



A
AirAGE
MEDIA

MARCH 2003

TRICK TRUCKS

3 exotic electrics

OFNA Ultra LX Pro
HPI Savage 21
Team Losi Triple-X4

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RADIO CONTROL car action

VOLUME 18 ■ NUMBER 3 ■ MARCH 2003

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by the RC Car Action team

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ON THE COVER: what's big, orange and gas-powered? Well, yes, a U-Haul truck, but we're talking about the H.A.R.M. Basic RTR that's about to tear up this month's cover. Beneath the big beauty, we have the Sirio 3.0cc powerplant; it's the first drop-in displacement-upper for the Traxxas T-Maxx. Walter Sidas snapped both shots.

Are fighting robots in your RC future?

"Knock his block off!" Back in the '70s, that was the mantra of Rock 'Em Sock 'Em robots—the toy that pitted two fist-pumping plastic pugilists against each other in search of the perfect head-popping uppercut. The concept is still popular, but modern fighting robots are now infinitely more complex and exciting than earlier thumb-powered combatants. Radio controlled and packing powerful weapons, the fierce fighting machines popularized by the current crop of battling 'bot television shows (and featured in *RC Car Action* way back in 1996 when "Robot Wars" was the only game in town) can weigh hundreds of pounds and are equipped to shred, crush and tear the metal skins off their opponents.

Exciting, yes, but not very accessible for those of us without the time, money, space, or skill to build our own big 'bots (do you know how to weld and install hydraulics?). The SOZBOTS guys have the right idea: their vision of 1-pound, mini fighting robots that make use of many off-the-shelf RC components is far more doable for Joe RC Guy (see for yourself with an up-close look at Sozbots in "Robot Rumble," starting on page 140). For those of us who actually want to get our hands dirty (or metal pincers, as the case may be), Sozbots are the way to go.

As a hobby, fighting robots have just begun to evolve. Wouldn't it be cool if you could buy a Kyosho robot to fight against your buddy's Tamiya robot and know that they're about equal, since they would have been designed to fight in the same class? And instead of trying to break each other, the object of the "fight" could be to land punches on exposed switches to score points or disable the robot electronically or to disable the other guy with infrared "laser beams" (as Tamiya has already perfected in Battle System for its 1/16-scale tanks). What do you think the future holds for RC and the robot scene? Email your crystal-ball predictions to me at peterv@airage.com!

TRICK TRUCKS & MORE

We've packed a ton more into this issue, starting with two words—trick trucks! We built three super-exotic electric-powered trucks: a Tamiya TA04 laid out on HPI dubs, a styled and wild HPI RS4 MT ready for the off-road race scene and a Traxxas Stampede with a facelift that's now ready to do some crushing. Sound interesting? Well, that's just the start of the excitement; we also dish up a T-Maxx body guide—with a beautiful body to show them off. Flip a few pages, and you'll see what I'm getting at.

Topping off this issue are our performance tests. Jason Sams, who recently joined our Southern California editorial team, is a diehard racer, and he takes the Losi Triple-X4 to the track to see whether it can surpass the standards set by its predecessor. We released HPI's Savage into the wild to see whether there's a patch of land it can't conquer. HARM's 1/5 RTR on-road racer takes up a few parking spaces as it winds out in our large test lot, and OFNA's latest buggy, the Ultra LX Pro, goes sky hunting—without your having to go hunting for accessories!

This buggy comes with everything! Until next time

Peter Vieira
Executive Editor



DON'T BUY ANYTHING BEFORE YOU BUY THIS!



2003 RC CAR ACTION BUYERS' GUIDE

So much stuff, so little time How will you ever figure out which RC gear you need to make your machine faster, tougher, better looking than—or just different from—the other guys? What about all the tools, finishing supplies, accessories and support gear you need to keep your ride running its best? It's all in here: the 2003 RC Car Action Buyers' Guide. With more than 1,100 items spread through its glorious color pages, it will transport you to RC heaven. In addition to all the gear, you'll find tech info, comparison charts and how-to-choose-and-use advice. There's even a special micro car section! What are you waiting for? Turn off the Speed Channel, put on some pants and get to the newsstand! On sale in early March.

RADIO CONTROL car action

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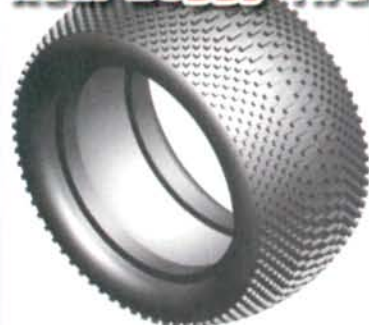


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"MAMBO" Rear Buggy Tire



New TRC off-road buggy rear tire. Fits all popular 1/10th buggies. Square pins with center dash pattern makes this a great tire for hard packed, high bite tracks. TN02A

"ZOMBIE" Front Buggy Tire



New TRC off-road buggy front tire. Fits all popular 1/10th buggies. Ribbed thread makes this a great all around tire. TN01B

"B4 Rims"



Front Rims Fit Associated B4, TNX
Rear Rims Fit B4/Losi XXX, TNY



www.teamtrinity.com

SMART READER

In January's "Starting Line," there's a pic of a micro-car that looks like a Smart Car. Which company makes it? I haven't received my issue of *Minis & Micros* yet, and I'm afraid it might not be in there! Keep up the good work!

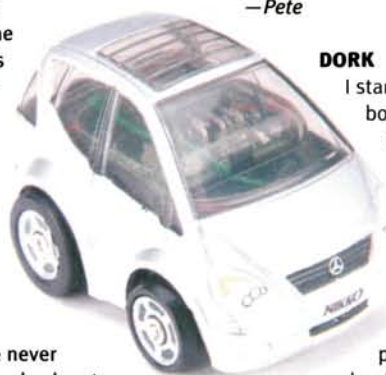
[email]

Chris Cazan

The Smart-look car is a Nikko I-Racer that is indeed featured in *Minis & Micros*; in fact, the "Starting Line" photo was borrowed from the opening spread of the issue's "Ultra Micro" feature.

The other cars shown are the Keyence Desk Runner tractor-trailer, Yokomo's Puchi Maru Honda Fit, Atomic Toys' Z-Car Celica (in red) and the Hobbico MicroSizer Celica (in black). If you've never seen a full-size Smart Car, check out thesmart.co.uk.

—Pete



DORK

I started with a TC3 and eventually bought a Micro RS4. I really enjoy taking my Micro to school and running it in the lot during lunch. The faculty does not mind as long as it is outside, but some of the other students have their opinions:

"What are you doing still

playing with toys in high

school?!" "What a dork!" I never

thought that being a "dork" could be so much fun! It annoys me when I see how some of the kids in my school are worried sick about fitting in! People should realize that they would be a lot "cooler" if they just thought for themselves. To all my fellow "dorks": more power to you! You keep RC going! [email]

Ben "The Dork" Davis

In high school, I was a "dork" for riding BMX bikes long after I got my driver's license. Now I'm a dork because I'm 35 and I want a Lego Blockade Runner for my birthday. Either that or the TIE Interceptor.

—Pete

ELECTRIC OR NITRO?

How often do you have to change the brushes and springs in electric motors? I'm thinking about buying a Traxxas Rustler, but I saw the Tower Hobbies ST-15 with a .15 engine. It costs 50 bucks more, but is it worth the money? My friend is getting an Evader ST. Is that truck comparable to the ST-15? [email]

Ryan

If you wonder whether the cost of brushes and springs will eat away the Rustler's \$50 price advantage, don't worry: the Rustler's Stinger motor has permanent brushes that will last a looong time. When they eventually wear out, you'll have to replace the entire motor to the tune of about \$20—still cheap. If I were you, I'd get the Rustler so you'll be able to run with your buddy and his Evader. You'll be able to share batteries and chargers, and the trucks will perform similarly. The ST-15 is a fine beginners' nitro truck, but I think you'll have more fun if you and your friend both start with electrics.

—Pete

OLD-TIMER?

I have a Futaba Magnum FP-T2PD. This is an older radio—maybe early to mid-'90s. Are today's radios better? Has a new piece of technology been incorporated into radios now? If I go racing again, will this radio be OK with other racers and officials? I have the same questions about the Novak T4 ESC, which dates from around the same time. Would this, which is rated for 4 to 8 cells (I think), work with the HPI Micro RS4's battery configuration?

Daniel Newman

Morristown, TN

Thanks, Daniel, for bringing back memories of my early racing days. The 2PD was an excellent controller for its time; I still own mine and use it in my RC boats. You can use it for racing, but advances in radio technology make today's radios less susceptible to glitching and allow trims to be set much more precisely (among other features). The Novak T4 should work in your Micro RS-4 application (you're right: it's rated for 4 to 8 cells), but today's ESCs are much more efficient and offer a much smoother throttle response. If you want to be competitive in racing, you may want to update your equipment. If you just go out for fun, your older gear will be just fine.

—Greg

FAST PITCH

I'm new to RC and I don't know a lot about the terminology, so can you help me? What does pitch mean in gears—48 pitch, 32 pitch, etc.? [email]

Brandon N.

MOTOR Cooling Stand



Black billet aluminum motor stand/heatsink with cooling fan. Designed to quickly and safely cool down your stock or modified motor between runs. No more trying to work on a **HOT** motor in order to make the next heat. Fan can be run off a 6 volt battery or power supply.
RC2085, \$29.99

BATTERY Cooling Stand



Foam car stand and battery cooler with oversized fan. Cools two stick or side by side packs at one time. Lets you get your packs back on charge quicker
RC5112, \$15.99



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ARE YOU SURE YOU WANT A SPONSOR?

I have been in RC for about two years. Is it hard to get a sponsor, and how good a driver do you have to be? Where do you go to find a sponsor? I plan to buy a Losi Triple-XT Matt Francis Edition with many hop-ups, and I can't wait to race it. It would just be soooooo awesome to have a sponsor. [email]

Peter Linden

To get a sponsor, you have to enter a few big national races and win them (or at least make the A-main). If the sponsors don't seek you out, you'll have to hit them with your resumé. Once you get a factory ride, you'll be expected to go wherever your sponsor needs you to race, and it's your job to win. The key word there is "job"; it isn't about you having fun and getting free stuff.

—Pete

ACKER-WHAT?

I've been boning up pretty heavily on the RC car scene to prepare for buying a Losi Triple-X buggy, but there are still two things I don't

understand: bump-steer and Ackerman. I understand camber, caster, toe-in, offset and all the other variables that affect a car's handling, but bump-steer and Ackerman have me tilting my head like the RCA dog. Can you explain what the heck they are? I'll be eternally grateful! [email]

Shawn Kitchen

I'll do anything for eternal gratitude. If you notice that compressing and extending the front suspension causes the front wheels to gain and lose toe-in, you have bump-steer, which you don't want. (That's why Losi gave the Triple-X its angled steering bellcranks.) "Ackerman" is the difference in steering angles between the wheels on the inside of the turn and the wheels on the outside; all modern cars are set up so that the inside wheels turn more sharply. Increasing the difference between the inside wheels' angle and outside wheels' angle give "more Ackerman"; reducing the angle gives "less Ackerman."

—Pete

YOU SAID IT

"Thank you for helping me to build a bridge to my stepson"

Thank you for the help you have given me with my stepson. He has been in my life for seven years. He is now 14, and during the first two years, we never seemed to have "common ground." One day, I picked up an issue of *RC Car Action* and found myself back in the hobby. Well, he read the same issue and started to ask questions. After I purchased my RC10 T3, I bought him a Traxxas Rustler. Because of your magazine, I have developed a relationship with a wonderful person who is great to be around. Thank you for helping me to build this bridge between us. The hours we spend at the track and tweaking our cars are hours spent talking. I have found the "common ground" I was looking for, and if it wasn't for RC and your magazine, I would still be looking. [email]

Greg Hauss

Great letter! I'll send you two Trinity Reference bodies. I'd hate to see your relationship with your stepson sour because of a big blowout about who gets the free body!

—Pete



Each month, "Readers Write" sponsor Team Trinity awards the "You said it" letter writer the Reference body of his choice. This is Trinity's Wasp for the Kyosho Inferno MP-7.5.

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

■ Peter Vieira: peter@airage.com
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■ Paul Onorato: paulo@airage.com
■ Steve Pond: stevep@airage.com
■ Greg Vogel: gregv@airage.com



HYPER SPEED!

OFNA Hyper 7 PBS

Is this a great-looking buggy, or what? The newest addition to OFNA's Hyper 7 series is the PBS, which stands for "pivot-ball suspension." But there's more to the new Hyper than a more adjustable suspension; the big buggy also has an 8-port version of the Hyper .21 engine, and OFNA plans to add a starter box to the RTR deal—along with the usual fuel bottle, glow starter and Airtronics radio gear. And yes, that is an included factory-finished body!

SIRIO TX-18 3.0cc

Anyone hoping to add more power to the TRX 2.5-equipped Traxxas T-Maxx has his work cut out for him, since the engine is now officially the most powerful .15 tested by *RC Nitro* magazine! (See the upcoming April issue for the full story.) Trinity is going for extra cubes with its new .18 engine (that's 3.0cc, versus 2.5cc for the TRX engine). Sirio's .21 engine is the most powerful mill we've dyno-tested, and this small-block .18 has many of the same features. The Italian-built Sirio powerplant can be bolted directly into the T-Maxx and is compatible with the electric starter. A 5-port ABC piston and sleeve, a manifold and a storage bag are included.

Sirio; distributed exclusively by Trinity Products Inc. (732) 635-1600; teamtrinity.com.

18-WHEELER



PROTOFORM 190mm Altima

Nissan's original Altima was a nice car—for your mom. But for 2003, the mid-sizer has a Maxima-flavored makeover that transforms it into a worthy luxo/performance platform with style to spare. Protoform's tuner-take on the sleek sedan is even more muscular, and it includes the usual Protoform pluses: overspray film, rear wing with mounting hardware, window masks and a full decal set.

Protoform; distributed by Pro-Line (909) 849-9781; pro-lineracing.com.



awesome Altima



**TAKIN' IT TO THE
MAXX**

SIRIO Hop-ups for the Traxxas TRX 2.5 engine

Does anyone really need more power from the TRX 2.5 engine? Nah. But would anyone say no to more power?

• Sirio didn't think so either, and that's why there's now a full line of parts to add a little Italian flavor to your TRX 2.5. The new internal bits include:

- **Heavy-duty connecting rod with dual bushings.** It's more durable than the stock rod, says Sirio.
- **Five-port ABC replacement piston and sleeve.** Sirio promises a power boost with the sleeve and piston kit, which can be used with the stock conrod or the Sirio version.
- **High-performance crankshaft with more timing.** Yet more power, says Sirio, and it's fully compatible with the stock internals as well as with the other Sirio upgrade parts. Sirio; distributed exclusively by Trinity Products Inc. (732) 635-1600; teamtrinity.com.

HPI Pirelli "T" 26mm Rally Tire

The next time you're watching the WRC rally machines of Ford, Subaru and other teams breaking 100mph on some cow path on the Speed Channel, try to get a look at their rubber; chances are, you'll see Pirelli "T" tires. HPI can give your sedan the same look with its new, officially licensed versions of the T tread. The pint-size Pirellis are 26mm wide and molded in HPI's long-life "S" compound. HPI Racing (949) 753-1099; hpiracing.com.



T-TIME



RC4115
\$99.99

BRUSH FACTORY 2

Cuts, Slots & Serrates Laydown, Standard & P-94 Brushes

STAR POWER

HPI Chrysler PT Cruiser & 300M

It's hard to believe that Chrysler was ever known for the K-car when you look at the latest uniquely American designs from the penta-star guys. The genre-busting PT Cruiser and retro-modern 300M are lookers in the real world, but HPI's polycarbonate versions outdo their sheet-metal sisters. Both of HPI's new Chrysler shells are 200mm designs and include rear wings, window masks, overspray film, and precut decals—the best part. I'll take peel and stick over tedious cut and stick any day of the week!

HPI Racing (949) 753-1099; hpiracing.com.



Over \$450.00 of after market parts are incorporated into the "Team" version of the Reflex NT including:

- Front One Way
- Vented Disc Brake
- Aluminum Hex Adapters for Wheels
- Stiffer Composite Suspension Components
- Aluminum Brake Lever
- Front & Rear Roll Bars
- Centax Type Clutch
- Big Bash Bumper With Revised Front Body
- Post Mounting
- Pivot Ball Shock Upper Mounts
- Delrin Shock Pistons
- Low CG Motor Mounts
- Aluminum Front Shock Tower

Kit does not include, motor, pipe, tires, body or electronics

NT1001 "REFLEX NT TEAM"



REFLEX NT TAKES GERMAN NITRO TOURING NATIONAL CHAMPIONSHIP

The weekend of October 12th and 13th Trinity's German Team, Team Trinx/Trinity, competed at the German Nationals in Leipzig with the Reflex NT.

This race was run on rubber tires and all the top drivers from all over Germany participated.

Result: 1 Benjamin Gröschel Reflex NT, National Champion, 7 Julian Kirste Reflex NT, National Jr. Champion, 11. K-H. Vogelgsang Reflex NT, German National Sr. Champion





GET MUGGED!

PRO-LINE Mugshot

Pro-Line's Bow Tie tread comes to 1/8-scale buggies with the new Mugshot, which has larger lugs than any other Pro-Line buggy tire; the only places you'll see bigger bow ties are in your parents' '70s prom photos. The widely spaced, big-lug look says "soft track," but according to Pro-Line, the Mugshots hook up on hard pack, too. Firm, low-roll inserts are included, and you can get "Mugged" with soft M2 and long-wearing XTR compounds.

Pro-Line (909) 849-9781; pro-lineracing.com.

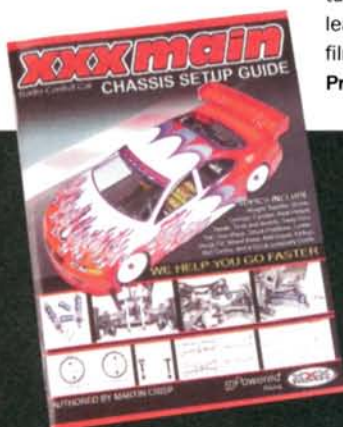


MAXX ON THE DOWN LOW

PRO-LINE Crowd Pleazer Maxx

The now familiar Crowd Pleazer look comes to Maxx trucks—and other monsters with creative trimming. A bolt-on spoiler is included with the required mounting hardware, and thanks to the Pleazer's extra-low profile, your Maxx might actually turn faster laps because of its lower center of gravity. At the very least, it will look cool. Window masks, decal sheet and overspray film are all part of the deal.

Pro-Line (909) 849-9781; pro-lineracing.com.



Book 'em

XXX-MAIN Radio Control Touring Car Chassis Setup Guide

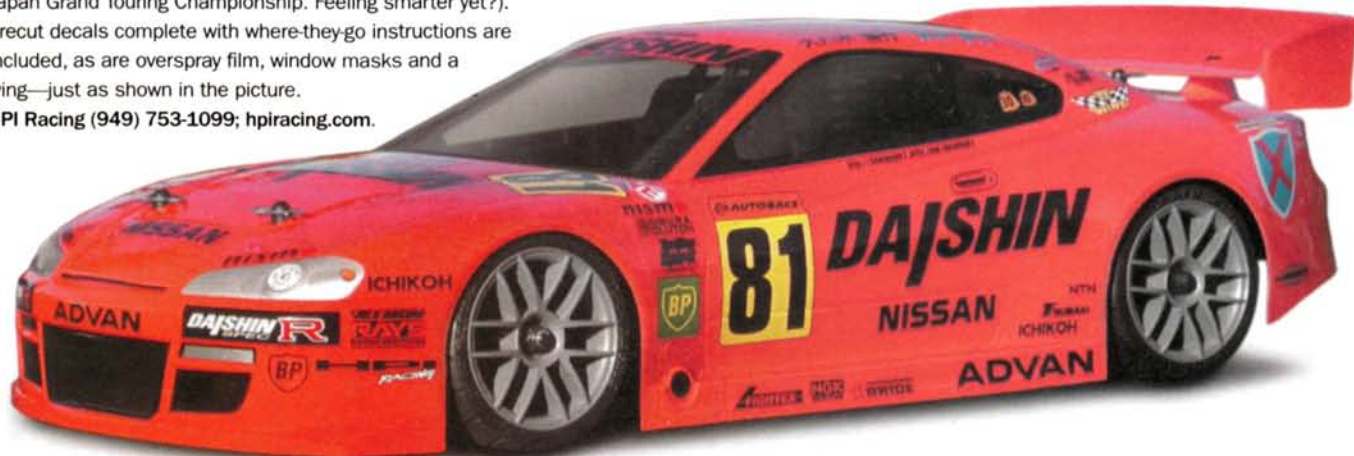
In addition to its videos, most of you know the xxx-Main guys for their wide array of paint masks and body accessories. Now they want to make your car go as fast as it looks, too. The "Radio Control Touring Car Chassis Setup Guide" is an easy-to-understand, fully illustrated book by Martin Crisp that covers all the most important aspects of chassis tuning. You'll be able to get a handle on handling, and you'll even understand what to do with all of those shock-mounting holes!

HPI Sylvia GT 200mm

Do we have space to squeeze in one more HPI bod? Yeah? Good. This is the Nissan Sylvia—just about the hottest car going for JDM fans and a regular leader on the JGTC circuit (don't you know any acronyms? JDM is Japanese domestic market; JGTC is Japan Grand Touring Championship. Feeling smarter yet?). Precut decals complete with where-they-go instructions are included, as are overspray film, window masks and a wing—just as shown in the picture.

HPI Racing (949) 753-1099; hpiracing.com.

**neat
NISSAN**

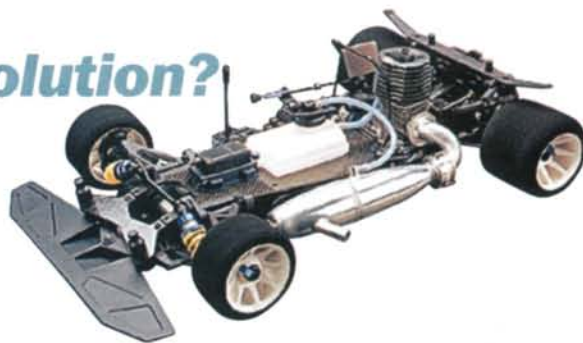


You say you wanna Evolution?

KYOSHO F2001 Evolution

The Evolution is Kyosho's follow-up to the Phantom 1/8-scale on-road car, and it appears to be completely race-ready. There's plenty of blue-anodized aluminum to help it look fast, but what really counts are the parts that actually make the Evolution go fast—parts such as the graphite upper deck that centers and lowers the onboard gear for better transitional handling, quick-release wheels (since pitting fast is as important as on-track speed), a lightweight, clutch-style 2-speed transmission and Teflon-coated shock bodies. Look for a review of the F2001 Evolution as soon as we can snag one!

Kyosho; distributed by Great Planes Model Distributors (800) 682-8948; kyosho.com.



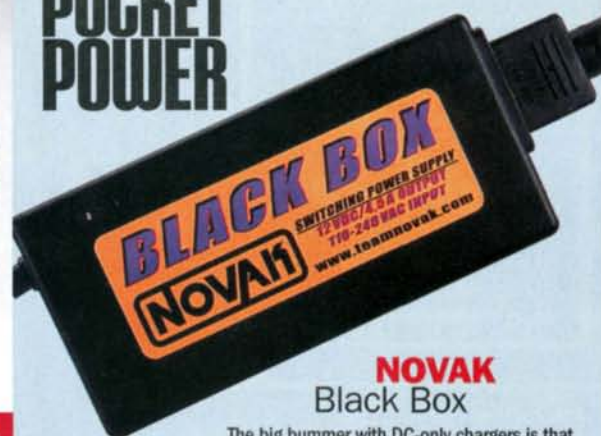
magnetic traction

VENOM RACING Magnetics mounted tires

Three chrome wheel choices and two tread choices in factory-glued combos? Sounds good to me. Is there anyone out there who really likes gluing tires? Thought not. The Magnetics include round-carcass Hyper Grip and flat-carcass Super Grip tires on Venom's Nitrous, Speedster and Twisted Turner hoops (shown here, left to right). If these three designs aren't what you're after, sit tight: Venom will have added another design or two to the Magnetics line by the time you read this. Picky devil, aren't you?

Venom Racing; (800) 705-0620; venom-racing.com.

POCKET POWER



NOVAK Black Box

The big bummer with DC-only chargers is that you need to carry a bulky power supply. Well, that's in the past. With Novak's Black Box, you can drop 4.5 amps of power into your pocket. The box is about as big as a cell phone and has a connector for use with Novak's Millennium and Millennium Pro chargers; you can install your own connector to match other chargers. If you're in the market for a pro-quality charger, you can also buy the Black Box and the Millennium Pro as a combo package.

Novak Electronics Inc. (949) 833-8873; teamnovak.com.

KYOSHO 2002-series V-One S

Kyosho's V-One S is one of the best equipped "sport" nitro touring kits, and it's the Kyosho World Cup single-model racing series' official car. The S model has been updated with 2002-edition bodies complete with licensed racing graphics straight from the full-scale cars. New styles include the Mugen NSX GT500, Cerumo Supra GT500 and Porsche 911 GT3RS. All the usual V-One S chassis features have returned with the new body styles, including: GS15-R engine with tuned pipe; 3-belt 4WD; 3mm anodized-aluminum chassis; pivot-ball suspension; and sealed radio box.

Kyosho; distributed by Great Planes Model Distributors (800) 682-8948; kyosho.com. ■



WORLD CUP RIDE

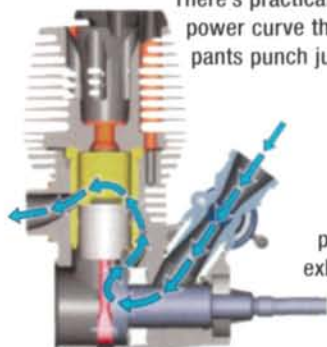
THE POWER OF TRX 2.5 - ELEVATING

ALL NEW DESIGN! The Traxxas TRX 2.5 Racing Engine is all new! It's the result of over 2 years of focused engineering development and thousands of hours of real-world testing. The TRX 2.5 delivers the power and technology of the world's finest high-performance racing engines, and truly elevates Ready-to-Run to Ready-to-Race®!

Bigger isn't always better.

Building a world-class racing engine goes well beyond just making bigger and bigger versions of old, inefficient designs. Smarter engineering and superior manufacturing have produced an advanced, high-tech engine that is 60% more powerful than our original Pro .15 engine, and simply blows away other typical .15-.18 size engines.

There's practically no match for the TRX 2.5's broad power curve that pumps out tire-blazing, kick-in-the-pants punch just about anywhere on the RPM scale.



Straight-through Rear Exhaust Flow

The Rear facing round exhaust port provides unrestricted "straight-through" exhaust flow. The low exhaust port height provides a longer duration power stroke for increased efficiency and total power output.



TRX IPS Crankshaft

The heart of the TRX 2.5 is its all-new 12mm IPS (Integrated Pilot Shaft) crankshaft. Vibration and inconsistent gear mesh caused by two-piece crank designs can steal up to 10% of the power. The one piece IPS crank provides extremely precise gear mesh and virtually eliminates vibration. In addition, the crank is precisely

positioned by the front bearing for nearly zero crankshaft endplay.

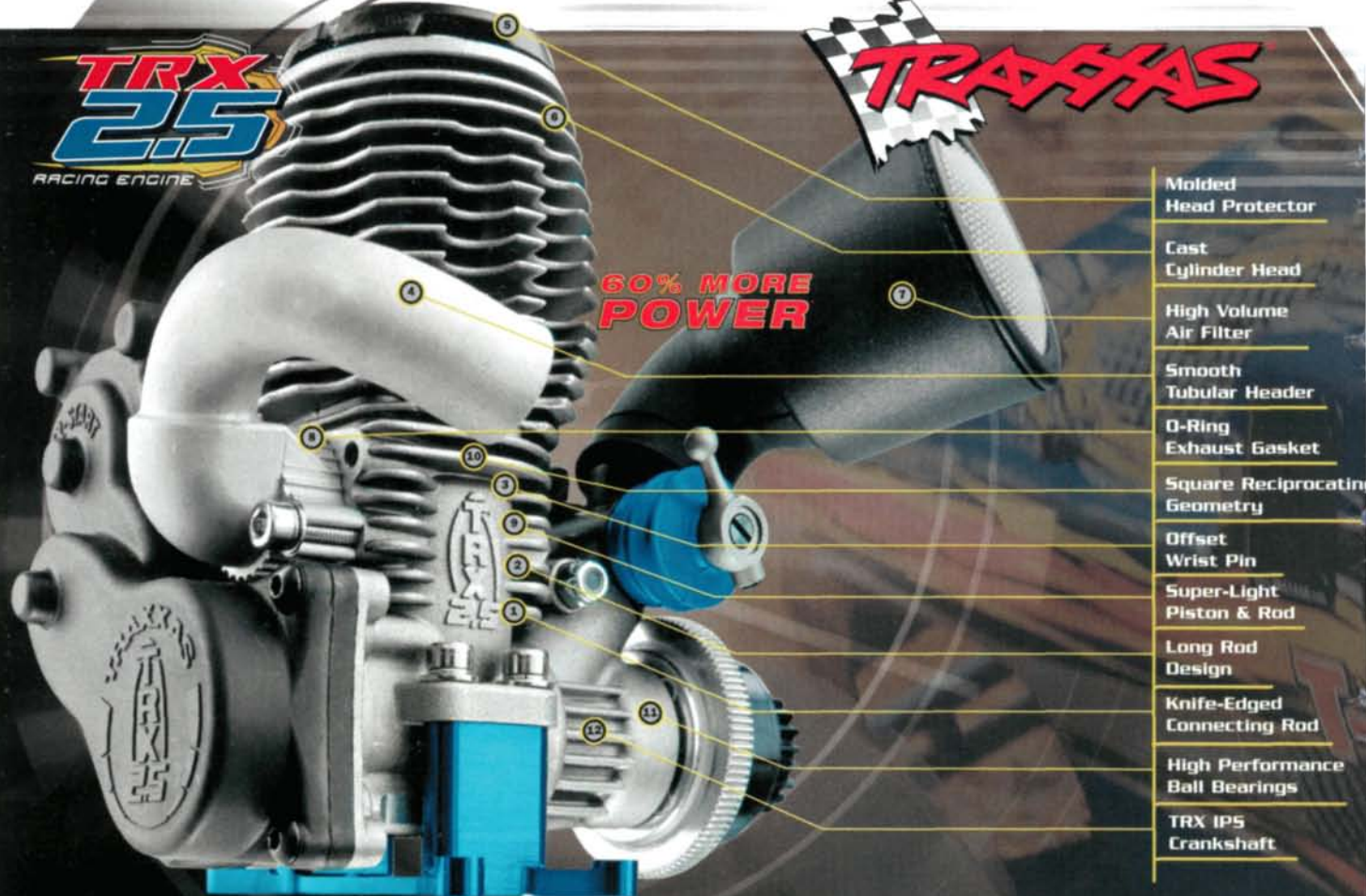
The IPS crankshaft undergoes multiple hardening processes. Surface preparation includes surface hardening, precision grinding, and micro-polishing for extremely long-wearing performance.

The bottom end of the connecting rod rotates on an extra large-diameter crankshaft pin, much larger than what is typically used in this size engine. This provides the reliability needed for these critical components in such high-powered engine.



Lightweight Piston and Rod

The super-light piston, wrist pin and connecting rod deliver a smoother, faster-revving, more efficient engine. The TRX 2.5's connecting rod is longer than in any other small-block .15 engine. The longer rod decreases the rod angle throughout the entire stroke of the piston, reducing side load on the piston. It adds up to less friction and more power.



- 1 Molded Head Protector
- 2 Cast Cylinder Head
- 3 High Volume Air Filter
- 4 Smooth Tubular Header
- 5 O-Ring Exhaust Gasket
- 6 Square Reciprocating Geometry
- 7 Offset Wrist Pin
- 8 Super-Light Piston & Rod
- 9 Long Rod Design
- 10 Knife-Edged Connecting Rod
- 11 High Performance Ball Bearings
- 12 TRX IPS Crankshaft
- 13

60% MORE POWER

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READY-TO-RUN TO READY-TO-RACE

Slide Carburetor Provides Superior Fuel Atomization

The TRX 2.5 is equipped with the all-new TRX Composite Slide Carburetor. The slide carburetor is desired by performance enthusiasts because it provides less restrictive, straight through airflow for more power and better throttle response than typical barrel carburetors. It's an expensive option on some models, and not even available on others! Look at all the advanced design features below:

Precision molding provides a smoother, better-flowing inlet tract than cast or machined carburetors

Industry First! The integral molded spray bar makes possible the use of an extremely intricate shape that increases torque and efficiency across the engine's entire RPM range

The low-speed needle has a positive stop to prevent damage to the spray bar from over-tightening

The carburetor, air-filter, and crankcase are integrated to provide smooth continuous airflow with minimal turbulence. It flows more air faster and more efficiently than conventional carburetors



The dust boot seals out harmful dirt and covers the built-in throttle return spring

Molded LCP (Liquid Crystal Polymer) body is lighter and greatly reduces power-robbing heat transfer to the carburetor body

Easy, Reliable, Push-Button Engine Starting

The new from the ground up, Traxxas EZ-Start™ System brings the power and convenience of push-button electric starting to the TRX 2.5 engine. Simply plug in the hand-held control unit, push the button, and the EZ-Start System automatically heats the glow plug and the lightweight, compact on-board drive spins the engine. There's no need to break a sweat yanking on a starter cord or keep up with a separate glow plug igniter.

Traxxas' exclusive Smart Start™ technology monitors critical starting functions, automatically sensing and diagnosing potential problems for trouble free engine starting every time.



A Regulated output supplies constant voltage to heat the glow plug, regardless of battery condition or starter motor load.

B Glow plug status indicator signals failed glow plugs.

C Elastomer crush drive output protects critical starter gears.

D Compact, planetary gear reduction.

E Indicator light shows the status of the starter drive circuitry.

F Efficient, thermal-sensing MOSFET circuitry provides greater starting power and longer battery life.

G Fully-enclosed battery.*

H Integrated vehicle connector for one-handed operation.

* Battery not included.

1 Knife-Edged Connecting Rod

The knife-edged connecting rod slips through the dense fuel air mixture in the crankcase, reducing turbulence and drag.

2 Long Rod Design

The TRX 2.5's connecting rod is longer than in any other small-block .15 engine. The longer rod decreases the rod angle throughout the entire stroke of the piston, reducing side load on the piston. It adds up to less friction and more power.

3 Offset Wrist Pin

The TRX 2.5 incorporates an offset wrist pin to further reduce piston side loading for more even cylinder wear, and longer engine life.

4 Smooth Tubular Header

The tubular header features smooth, rounded bends to eliminate exhaust flow restriction and turbulence. Its precise shape and length have been matched to the engine and the exhaust pipe for maximum power output.

5 Molded Head Protector

The molded head protector prevents damage to the head and secures the glow plug wire.

6 Cast Cylinder Head

The innovative cast head is engineered for the most heat reduction possible. Cooler running equals more power!

7 High-Volume Air Filter

The ultra low-restriction air filter provides superior air-flow and filtration for more power and long engine life. The two-stage design features a reusable oiled foam element and built-in fine mesh pre-filter.

8 O-Ring Exhaust Gasket

The exhaust header features an extra-tough, finned mounting base that dissipates heat and is sealed with a reliable O-ring gasket.

9 Super-Light Piston and Rod

The super-light piston, wrist pin and connecting rod deliver a smoother, faster-revving, more efficient engine.

10 Square Reciprocating Geometry

Square reciprocating geometry gives the TRX 2.5 a 1:1 bore-stroke ratio. What this means for you is no-compromise, smooth, linear power throughout the engine's entire RPM range.

11 High Performance Ball Bearings

High performance, large diameter ball bearings improve power by reducing friction. The rear bearing uses a special composite cage for reliable operation at engine speeds that approach 50,000 RPM!

12 TRX IPS Crankshaft

The heart of the TRX 2.5 is its all-new 12mm IPS (Integrated Pilot Shaft) crankshaft. Vibration and inconsistent gear mesh caused by two-piece crank designs can steal up to 10% of the power. The one-piece IPS crank provides extremely precise gear mesh and virtually eliminates vibration.

Questions? Call the Traxxas' technical support department at 1-888-TRAXXAS (872-9927). Customers outside U.S.A call (972) 265-8000. Or E-mail us at support@traxxas.com.

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readers' rides

YOUR BEST BUILDS

CORG AGATOL CHINO, CA TRAXXAS T-MAXX

Although Corg originally considered his T-Maxx as "just a toy," he's now a serious RC guy. He has incorporated a lot of aluminum from JT Racing Products. RC Alloys wheels, Pro-Line tires and a GMC Silverado body complete the truck. It's a great-looking ride and a cool picture, too!



LINDA GUSTAFSON MILAN, TN TEAM LOSI TRIPLE-X NT

After running in the novice ranks last season, Linda has moved up to the gas truck class with this Triple-X NT. As you may have guessed by the look of this truck, her favorite pro driver is Matt Francis. It has every red part Linda could find. The truck also has an O.S. .12 CV-R engine, Hitec servos, a Futaba 3PDF radio, Boca bearings and parts from Trinity, Lunsford and MIP. The Pro-Line body's paint job and this picture are courtesy of Linda's crew chief/husband Mike.



AARON AVILES ONTARIO, CA HPI RS4 RACER 2

There's nothing like a few skulls to intimidate the competition, and Aaron's HPI BMW wears them well. This touring car has a Mugen .12 engine, a heavy-duty 2-speed transmission, Robinson pulleys and flywheel and a tuned pipe. Aaron says that he's getting better at the track, and that running the car is a great way to relax after work.



GREG MUTZ BROWN DEER, WI CUSTOM SNOWPLOW

Back in '98, Greg was our Reader's Ride of the Year winner, and it's great to see that he's still up to his old RC tricks. This time around, he created a snowplow; he used the driveline from a Kyosho Wild Dodge Ram and fitted it into the frame of a Tamiya Mountaineer. The hubs, tires and rims were modified from those found on a Kyosho Landmax, and the body is taken from the Tamiya Juggernaut; a Futaba radio system supplies the control. The plow is all metal, and it can be angled depending on Greg's plowing needs.



WIN A ONE-YEAR SUBSCRIPTION TO RADIO CONTROL CAR ACTION MAGAZINE!

Send a sharp, uncluttered, well-exposed color photo of your vehicle (no Polaroids) and a brief description to "Readers' Rides," *RC Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we publish your photo, you'll receive a free, one-year subscription to *RC Car Action* and will be eligible to win the "Reader's Ride of the Year Contest." Write your address and phone number on your letter and on the back of every photo you send. Good luck!

**ERIK JOHNSON
SALEM, OR
TEAM ASSOCIATED
RC10 T3 RTR**

This Dodge stadium truck is 11-year-old Erik's first "real" RC vehicle, and he has many reasons to be proud of it. He saved up his money to buy the T3 and also painted the Pro-Line body himself. The truck features Hitec electronics, a P2k2 stock motor, Pro-Line Hole Shot tires in the rear and Edge tires up front.



**DWAYNE MARTIN
SAN DIEGO, CA
NEW ERA NITRO
DRAGSTER**

It's no coincidence that this dragster looks like a rocket and moves like one, too! The New Era dragster measures 4 feet, and it features a 2-speed Centax clutch, an RB Concepts C4 .21 engine, a CVEC tuned pipe, a JR radio and Team Orion internal stickers. Dwayne doesn't have any top speed or elapsed time (E.T.) figures yet, but he does plan to race the rail this year.

The Best Kept Secret in Racing...



Reedy "X-cell" GP3300's.
Reedy/Yokomo Gold Peak 3300's have longer run times than most other 3300 Ni-MH cells, and have a great low price that makes them your **BEST** choice!

- #665 Reedy GP3300
"X-cells", 6-Cells...\$89.99
- #664 Reedy GP3300
"X-cells", 4-Cells... \$59.99



Reedy 3300 "Extreme" Sanyos. The newest 3300 Ni-MH cells from Sanyo! The Reedy 3300 "Extreme" cells are cycled, matched, and voltage treated for on-track performance you can really feel.

- #660 Reedy 3300 "Extreme" Sanyos, 6-Cells...\$129.99
- #659 Reedy 3300 "Extreme" Sanyos, 4-Cells... \$87.99



SCOTT COSTANZO

MOBILE, AL

TEAM ASSOCIATED RC10B3

If you believe in subtle imagery, then you'll be able to tell that Scott is trying to show in this picture that his buggy is a step above his competition. This B3 has a Novak Fusion ESC, a Kyosho Atom speed control, a Futaba radio and a Peak Club Sport 2400 battery. Other features include: a Factory Team blue screw kit and front kick-up plate, Lunsford turnbuckles, RPM ball cups, an RRP top shaft, an HG spur gear, MIP outdrives and a Pro-Line Deja-Vu 2 body.

TONY CASABIANCA

NSW, AUSTRALIA

TEAM ASSOCIATED TC3

Touring car racing is going strong in Australia. This is Tony's new Factory Team TC3. His Protoform Accord body is equipped with Orion graphics, and the chassis features a Core stock motor, an LRP speed control and a JR radio system. Note that the proper RC term for anything beneath the body on an Aussie touring car is still "chassis" — not "down under." ■



and New **MATCHED** Sport Packs!



Reedy's "Rated-X" Matched sport pack batteries use genuine Panasonic or Sanyo Ni-MH cells that have been given the same cycling, matching, and voltage treating as Reedy's championship-winning racing cells. The batteries are fully assembled in clear tubes so you can see the matching info right on the label of each cell. Don't settle for "mystery" cells in your sport packs... get Reedy's "X-Rated" packs and see the power you've been missing!

REEDY

#698 Reedy "Rated-X" Sport Pack, Sanyo cells

#699 Reedy "Rated-X" Sport Pack, Panasonic cells

ONLY
\$59.99



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HINTS, TRICKS, TIPS AND IDEAS FROM READERS LIKE YOU

ASSOCIATED GT RADIO PROTECTION

The throttle servo and receiver on the GT are susceptible to damage from side collisions. Install an aluminum guard and attach it to the radio mounts. This will protect the radio components.

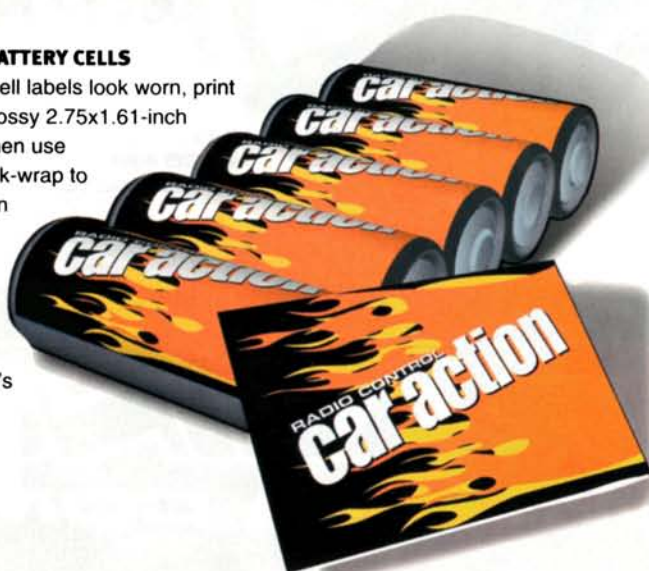
*Jonathon Watson
Browns Mills, NJ*



REUSABLE ZIP-TIES

Don't throw out used zip-ties; reuse them. Take a small safety pin or any similar object with a sharp point, and insert it into the square. This will release the ratchet and allow the end to slide out.

*Tim Cook
Lyons, OR*



CUSTOMIZED BATTERY CELLS

If your battery cell labels look worn, print new ones on glossy 2.75x1.61-inch photo paper. Then use single-cell shrink-wrap to put the labels on the cells. Be creative with the design; you can even make them match the body's paint job.

*Kevin Peterson
Bristol, WI*



EASIER TC3 WRENCHING

To replace the front A-arms and/or their mounts on a TC3, you must remove the bumper, which is held on with four screws. You can do this quickly by making this simple modification. Take off the bumper and slot the two rear screw holes on it. This way, when you replace the A-arms or their mounts, you'll have to remove only two screws. Then just loosen the remaining two screws and slide the bumper off.

*D. Manning
Gastonia, NC*

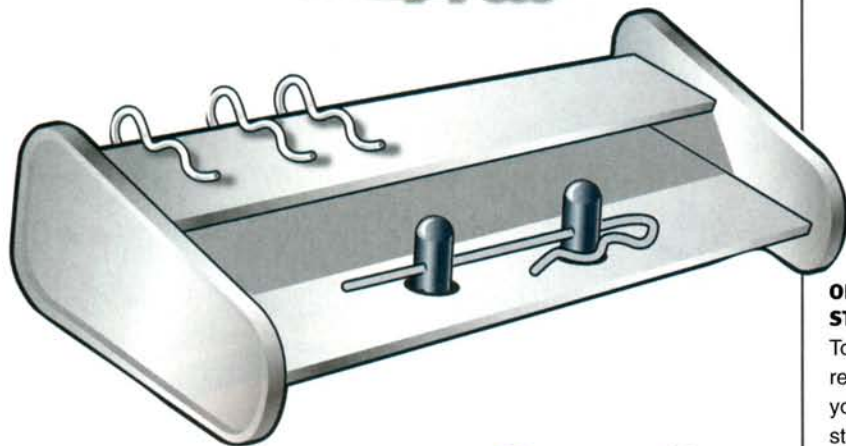


DENTED PIPE REPAIR

To repair a dented pipe, take it off the car and fill it with water. Plug the holes, and place the pipe in the freezer overnight. The water will expand and push out the wall of the pipe.

*Dustin Mijakawa
Honolulu, HI*

WIN AN OFNA YO-YO, OFNA QB4 AND RC CAR ACTION SUBSCRIPTION! SEE NEXT PAGE FOR DETAILS.



BUGGY BODY-CLIP STORAGE

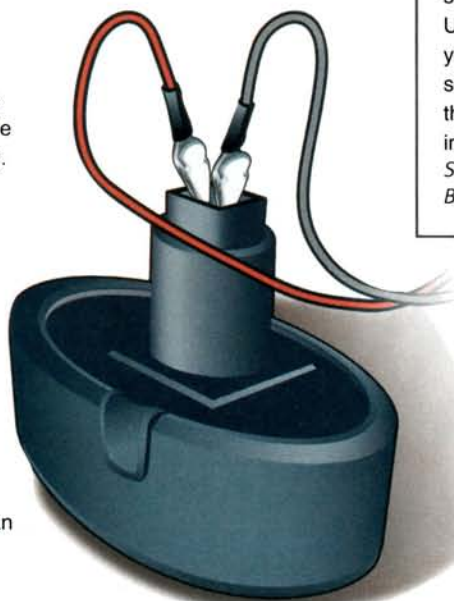
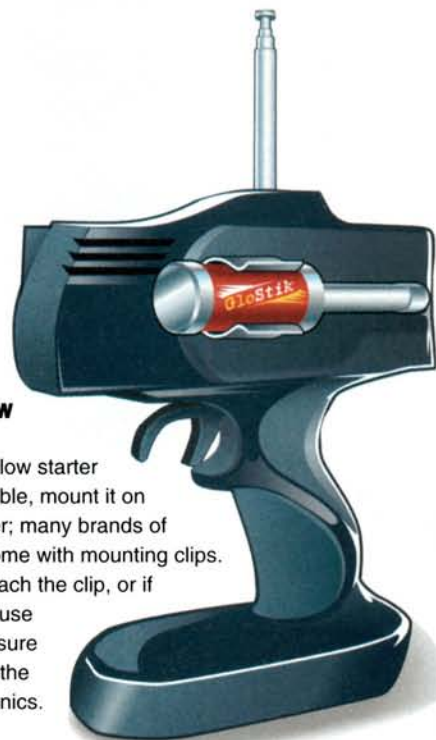
When you remove the body from an 1/8-scale buggy, before the body clips disappear into benchtop oblivion, slide them onto the spoiler for safekeeping.

*Raymond Cruz
Anaheim, CA*

ON-HAND GLOW STARTER

To keep your glow starter readily accessible, mount it on your transmitter; many brands of starter even come with mounting clips. Use glue to attach the clip, or if you choose to use screws, make sure that they clear the internal electronics.

*Steve Molnar
Barberton, OH*



PORTABLE POWER

If you need to true tires at the track and AC power isn't available, you can use the battery from a cordless drill. It has enough power to true at least four sets of tires. The battery can also run a motor lathe.

*Wolf Fischer
Granite Bay, CA*

MINI AND MICRO KINGPIN REPLACEMENT

Many 1/24-scale and similar cars use a spring mounted on the kingpin for front suspension. If you lose the spring, you can temporarily replace it with one from a click pen. Just cut the spring to the required length and install it.

*Derek Emerson
Missoula, MT*

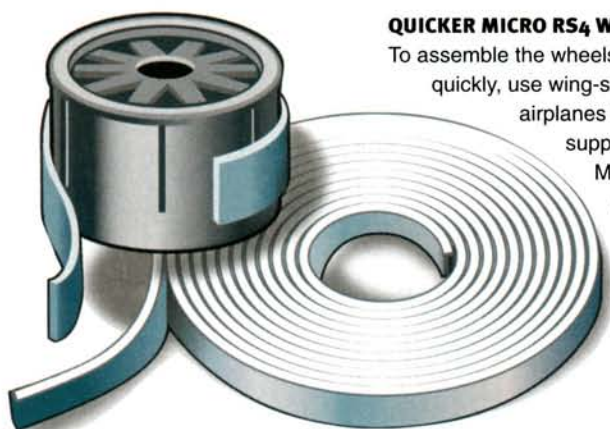


QUICKER MICRO RS4 WHEEL ASSEMBLY

To assemble the wheels for a Micro RS4 more quickly, use wing-saddle foam tape for RC airplanes instead of the kit-supplied foam squares.

Measure the circumference of the wheel, cut the foam tape to that measurement, and put it on the wheel.

*Nick Cebulla
Belleville, KS*



"Pit Tips" are submitted by readers and are screened for functionality, feasibility and safety but are not tested by Radio Control Car Action. Radio Control Car Action and the submitting authors are not responsible for personal injury or damage to models or tools resulting from readers' use of "Pit Tips."

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troubleshooting

YOU'VE GOT PROBLEMS? WE'VE GOT FIXES.

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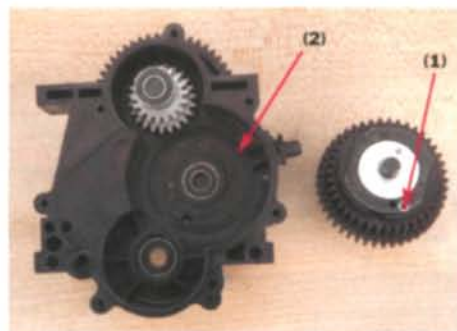

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SAVAGE SOLUTION

My HPI Savage's transmission is giving me problems. I can drive the truck forward, but it doesn't roll backward freely. Instead, it locks up when I try to roll it backward or when I let off the throttle going up a steep hill. What do you think is wrong, and how do I fix it? [Email]
 Henry Auturo

You will have to take the tranny apart. Then check the 2-speed spur-gear assembly. One of the two screws that hold the clutch-holder plate has probably backed out far enough to rub against the tranny case; this prevents the truck from rolling backward freely. There are a couple of solutions:

1. Use two 2x12mm machine screws to replace the stock self-tapping screws. These screws are slightly longer than the stock screws, so they will bite into more material, and they have more threads than a tapered screw, so they are likely to stay put.
2. If you can't find machine screws, you can remove the stock screws, put a little silicone sealant on their threads, and then screw them back into the gear. The silicone will hold the screws in place but will still allow you to remove them easily.
3. As a last option, you could use CA to keep the screws in place. Just put a tiny drop of CA into both holes from the back of the second-speed spur gear. If you need to disassemble the 2-speed, though, you'll find it difficult to remove the screws.



The shiny screw (1) on the 2-speed tranny is the one that backed out and rubbed against the tranny case. The arrow points to the groove (2) it made.

With the 2-speed disassembled, flip over the second-speed spur gear and put a tiny drop of CA into both screw holes. This will help to prevent the screws from loosening.



REAL PERFORMANCE PRODUCTS!

T-Maxx/2.5-Maxx Steel Top Shaft

NEW



This precision machined **hardened** steel top shaft will fit all T-Maxx. Includes oversize ball bearing. RRP 8525

T-Maxx/2.5-Maxx FORWARD ONLY Steel Gear Kit

NEW



This kit contains a 26T **hardened** steel output gear, a forward drive hub adaptor, steel spacer and Pin. RRP 8586. **Hardened** aluminum version RRP 8585.

T-Maxx/2.5-Maxx Hardened Forward Primary Gear

Precision machined from solid steel and then **hardened**. RRP 8529. **Hardened** aluminum version RRP 8528.

NEW


www.robinsonracing.com

T-Maxx/2.5-Maxx Forward Primary and Reverse Gears

NEW



This kit contains a precision machined **hardened** steel primary forward gear, a **hardened** aluminum reverse gear and pin. RRP 8521

Make No Compromises!

T/E-Maxx/2.5-Maxx Accessory Spurs



A wide range of spurs fit our Double-Disc Slipper Kits. Choose from machined Super-Tough plastic spurs in 66, 68, 70, 72, 74 and 76T sizes, RRP 82XX, or CNC machined steel spurs available in 65, 72 and 76T sizes, RRP 83XX. Small Clutch Plate/Gear Adaptor fits 65 thru 70T spurs. Large Clutch Plate/Gear Adaptor fits 72 thru 76T spurs.

T-Maxx/2.5-Maxx Lightened Spur And Double-Disc™ Slipper Kit



RRP's NEW line of Lightened Spur and Double-Disc Slipper Kits for Traxxas Nitro and T/E-Maxx/2.5-Maxx trucks are designed to improve performance and increase reliability. This combo incorporates a machined steel or Super-Tough plastic spur, a Vented Aluminum Clutch-Plate/Gear Adaptor, 2 Slipper Pads and 2 Plates to deliver the adjustability you need and the increased performance that you demand. **Complete Slipper Kits** are available in the following sizes: RRP 8166 Slipper Kit with 66T Super-Tough plastic spur (Stock Size) for E-Maxx RRP 8172 Slipper Kit with 72T Super-Tough plastic spur for Traxxas Nitro RRP 8465 Slipper Kit with 65T Steel Spur for Traxxas Nitro RRP 8472 Slipper Kit with 72T Steel Spur (Stock Size) for T-Maxx. Spurs, Clutch-Plate/Gear Adaptor and Slipper Pads also sold separately.

T-Maxx/2.5-Maxx Primary Reverse Gear



This gear is precision machined from solid aluminum and **hardened**. Includes pin. RRP 8522

HELP FOR A SEASONED ENGINE

My nitro truck's .15 engine has had about 2½ gallons run through it. The engine still has good compression, but before the last few runs, it has been really hard to start. Once started, it runs well as long as I stay on the throttle; if I don't, it stalls pretty easily. What's wrong with it? Is it worn out? [Email]

Dan

A properly tuned engine should last through four or five gallons before the piston and sleeve have to be replaced, so your engine is probably still strong and needs only to be re-tuned. It dies when the throttle is not pegged because the low-end needle has been set too lean and the engine is starved of fuel; to richen the bottom end, turn the low-speed needle about ¼ turn counterclockwise. This will help to ensure that the engine is given enough fuel at low speeds before the high-speed needle setting affects its tune. You can also increase the idle by turning the idle screw ¼ turn clockwise. This will give the carburetor more fuel to get the engine started. Before each outing, prime the carburetor before you try to start the engine. Put a finger over the exhaust stinger, and turn the engine over three or four times without the glow igniter.



Above: the idle adjustment screw is usually just in front of the carb intake. Turn it clockwise ¼ turn to increase the idle.

Left: if the fuel tank doesn't have a primer button, you can easily prime the tank by plugging the stinger and pulling the starter cord a couple of times.

T/E-Maxx/2.5-Maxx Steel Diff Gear Set



T/E-Maxx/2.5-Maxx differential gear set, includes: 1 beveled pinion gear, 1 beveled spur gear, 4 re-usable stainless steel Phillips head screws, 1 tube Associated Black Grease, and a shim kit for spider gears with 10 .003" shims. 2 sets needed per truck. RRP \$590

T-Maxx/2.5-Maxx Aluminum High Performance Brake Kit



New, lightweight aluminum high performance brake kit, includes bigger, more aggressive brake pads and steel backing plates. One piece vented rotor minimizes side-to-side wobble. Also fits newer T-Maxx. RRP \$562. Older style half shafts use Brake Kit RRP \$560.

www.robinsonracing.com

Make No Compromises!



T-Maxx Vented Flywheels



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP \$551 Blue, RRP \$550 Natural Silver. NEW 2.5-Maxx Vented Flywheel, Blue Only RRP \$552.

T/E-Maxx/2.5-Maxx Replacement Pinion



This precision machined steel pinion fits RRP \$590 Diff Gear. RRP \$591

FORWARD ONLY Racing Gearbox For T-Maxx/2.5-Maxx



Precision CNC machined from aircraft grade billet aluminum this FORWARD ONLY Racing Gearbox will give your T-Maxx or 2.5-Maxx a serious competitive edge. RRP \$595

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GLITCHING WOES

I thought my touring car was glitching because I didn't have capacitors on my stock motor. I installed capacitors, but the car still glitches when it is farther than 25 feet away. What could be causing this problem? [Email]

Shane Weaver

Glitching can be caused by a number of things, but there are some "usual suspects." Check the following:

1. First, check your transmitter and receiver batteries. Depleted radio batteries are the most likely cause of glitching.
2. Next, make sure that the receiver antenna is not damaged anywhere, and make sure that it isn't touching any graphite or metal parts. If the antenna must pass over one of these materials, slide a small piece of fuel tubing over the antenna wire so that it cannot touch the graphite.
3. If the glitching started immediately after a gnarly crash into a wall, the ceramic filter inside the receiver might be damaged. You'll have to return the receiver to its manufacturer for repair.
4. Experts say we should never mount the receiver on top of a servo because the servo "noise" is transferred directly to the receiver.
5. Motor noise can be eliminated if you twist the positive and negative wires that run from the speed controller to the motor together.
6. You must also have the right capacitors, i.e., ones with a resistance value of 0.1 microfarad (such capacitors are usually numbered 104).
7. A clean, efficient motor also helps to minimize the risk of radio interference. Clean your motor regularly with motor spray, and cut the comm when it shows signs of excessive wear.



To insulate it and minimize the chance of glitching, protect the antenna with fuel tubing where it passes over material such as graphite.

When you use an ESC, capacitors are must-haves; three are the norm. Solder a capacitor between the positive motor tab and the negative motor tab, the positive tab and the ground tab and the negative tab and the ground tab.

RS4 Nitro Aluminum Brake Kit



Lightweight aluminum, variable braking system. RRP 1575

RS4 Nitro Vented Flywheel



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP 1570 RRP 1571 Pull Start

48P Absolute Series Pinions



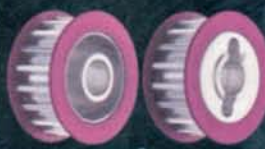
Super hard, lightened and cut with unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone! Available in 48P in 16T thru 28T sizes. RRP 1416 - RRP 1428.

T-Maxx/2.5-Maxx Hardened Steel Clutchbells



CNC Machined from solid steel these bells are built to last. They take the 5x11 bearing (NOT included). Available in 19T, RRP 8119, 20T RRP 8120, 21T RRP 8121 and 23T RRP 8123.

RS4 Nitro Small Aluminum Drive Pulleys



Hardened drive pulleys, sold in pairs. RRP 1538

48P / 64P SuperLite Aluminum Pinions



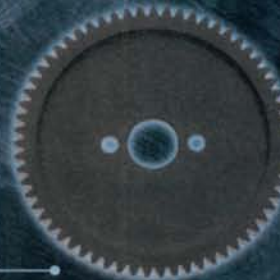
They're lightened, hard coated and precision cut. Available in 48P in 16T thru 28T, and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P). Only \$5.25

Stealth Spurs



These precision machined spur gears are super quiet. They're available in 48P in 60T thru 96T sizes, and fit any Associated or HPI electric car or truck. RRP 1860 thru RRP 1896

RC-10GT 48 Pitch Spurs



Precision machined from heat-resistant, super tough plastic, these spurs mesh flawlessly with our Clutchbells. Available in 63T thru 67T. RRP 2263 - RRP 2267

48P Hard Nickel Plated Steel Pinions



These precision cut gears have an extremely hard coating that makes them really last. Available in 12T thru 35T. RRP 1012 - RRP 1035

BATTERY BARS ALWAYS COME UNDONE

I recently bought new matched cells, and I soldered them myself. I went to the track to race, and during my first qualifier, one of my battery bars came unsoldered, and my car was dead on the track. The same thing happened again in the Main. Why do my solder joints fail? What can I do to fix the problem? [Email]

John Barrigan

1. Before you solder new packs, you should clean the ends of the cells with motor spray. This removes the oily residue that is left on the cells at the factory.
2. Scuff the positive and negative ends of the cells with a file or low-grit sandpaper (80- or 100-grit will work fine). This will allow the solder to grab the cell and make a more efficient solder joint. A polished surface does not usually allow a good soldering joint.
3. For a couple of bucks, buy a battery-soldering jig to hold the cells in place. This will allow you to concentrate on soldering while the cells are held securely.
4. Use a soldering iron or gun that has a rating of 40 watts or more; adjustable temperature is also preferred.
5. Turn the temperature setting up on the gun or iron so that it takes just a couple of seconds to heat the solder. An iron that is not hot enough may damage a cell if it rests too long on it before the solder melts.
6. Use only 60/40 rosin-core solder. Acid-core solders may damage electronics and will be very difficult to reheat when you need to unsolder something.
7. It is important to use flux when soldering so that your joint will be secure.
8. Use a liberal amount of solder. Small solder joints are not as strong and will sometimes come apart during the impact of a crash.
9. Take your time when you solder to avoid having a hack-looking joint that isn't effective.
10. For extra security, you can place a small bead of Shoe-Goo between the cells after they have been soldered together. This will definitely prevent the pack from coming apart. ■



Buy a battery soldering jig such as this one from Deans. It makes a world of difference when you assemble packs.



To roughen the ends of the cells so that the solder gains a better bond, use a Dremel tool with a sanding drum.

TOOLBOX



Trinity Reflex ball-end wrench

Make your life easier with a ball-end wrench from Trinity. It makes installing ball cups on turnbuckles a breeze. The ball cup is held firmly in the wrench, so it can be screwed onto a turnbuckle without difficulty. The blue-anodized aluminum wrench is double-edged to handle large and small cups, and it has a knurled center section for extra grip. Use the wrench to work on Trinity's Reflex NT, RPM and Team Losi ball ends.

Item no. 2084; \$10.99.

Trinity Products Inc. (732) 635-1600; teamtrinity.com.

NEED HELP?

Send your "Troubleshooting" questions and comments to Jason Sams, jasons@airage.com.

RC10-GT Steel Combo



Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. RRP 2365

RC10-GT Hardened Steel Idler Gear



Cut from solid steel stock, this RC10-GT gear is lightened and hardened for super quiet precision and extra long life. Black tranny grease included. RRP 2213

Associated Titanium Stealth Top Shaft



CNC Machined from solid titanium, this super hard, super light top shaft will fit any Stealth transmission. RRP 1512.

www.robinsonracing.com

Blue Lightened Slipper Kit



The rear plate is hard anodized and the front plate is color treated. The front plate holds the pad forcing it to slip on the rear plate. When pad wears, just flip it over for a new surface. RRP 1515 Associated

Hardened Diff Gear



Hard anodized, precision CNC machined aluminum diff gear. RRP 1513 RC10-GT

RC-10GT Hardened Steel Clutchbells



These steel Clutch Bells are CNC machined from solid steel then the teeth are machined on. This makes the part stronger with less gear "run out". Available in 14T thru 20T, 22T and 24T. RRP 22XX

TC3 Ultra 48 Pitch Spurs



Precision machined from heat-resistant plastic, these spurs mesh flawlessly with our pinions. Available in even numbers from 70T thru 80T. RRP 1670 - RRP 1680.

ROBINSON RACING PRODUCTS

4968 Meadow View Drive · Mariposa, CA 95338 · Voice 209.966.2465 · Fax 209.966.5937



12 RADIO CONTROL CAR ACTION

THE TRAXXAS T-MAXX AND E-MAXX aren't just the current kings of monster truckdom; they're also some of the most popular ready-to-run vehicles to ever hit RC. Which leads to the "problem" with the Maxx trucks: as good-looking as the factory bodies are, having the same body style as every other guy with a Maxx gets old pretty quickly. So, get a different body! From semis and SUVs to military machines and race-bred stadium shells, there's bound to be a look (or two, or 10) to suit your personal style. We've collected all the facts and features on all the currently available Maxx bodies for your shopping pleasure, along with one particularly beautiful body whose curves just can't be duplicated in Lexan. Now, go find your favorite flatbed!

Maxx body guide

TRUCK COUNTRY

OVER 80 NEW LOOKS FOR YOUR TRAXXAS MAXX!

By the RC Car Action team

Photos by Walter Sidas & Pete Hall



TRINITY

Trinity's Reference Body line includes just one shell for the Maxx (for the moment, at least), and although the "Nitro Monster Truck" may lack a snappy name, it's definitely a sharp shell. Window masks, overspray film and decals are included.

BODY NAME	ITEM NO.	PRICE	FEATURES*
Monster Truck	1204	\$28	M O S

TRINITY PRODUCTS INC. (732) 635-1600; teamtrinity.com.

*See top right



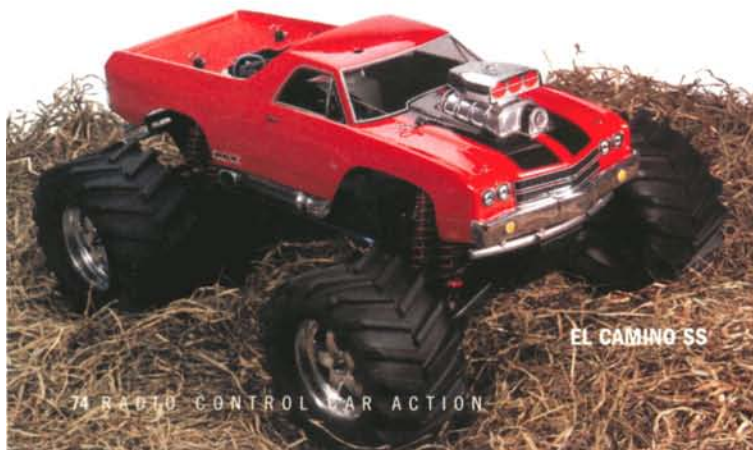
MONSTER TRUCK

HPI

HPI's Savage 21 was the originally intended recipient of these truck bods, but the El Camino SS, Dodge Ram and Nitro GT-1 all fit the T-Maxx, too (and vice versa; all T-Maxx bodies will fit the Savage 21). The El Camino includes the faux blown engine, and all three bodies have overspray film, decals and window masks.

BODY NAME	ITEM NO.	PRICE	FEATURES
Nitro GT-1 truck	7176	\$30	C M O S
Chevrolet El Camino SS	7177	\$30	A C M O S
Dodge Ram	7178	\$30	C M O S

HPI RACING (949) 753-1099; hpiracing.com.



EL CAMINO SS

74 RADIO CONTROL CAR ACTION

Features Legend

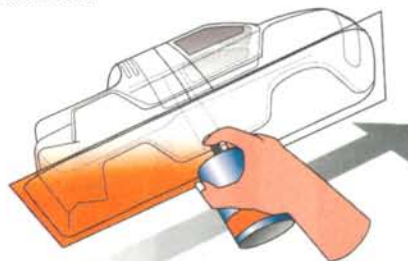
- A = Accessory included (wing, visor, fairing, etc.)
- C = Precut stickers
- M = Window masks supplied
- O = Overspray film
- P = Painted
- S = Sticker sheet included
- X = Extended rear body posts included

World's easiest Paint JOB that doesn't suck

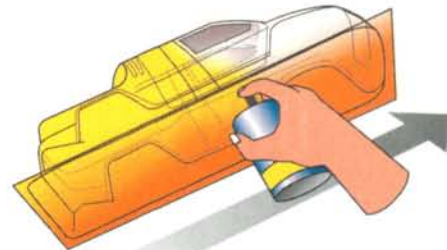
NO MASKING, NO AIRBRUSH and just two colors—the "perimeter fade" is a paint job anyone can handle. Trust us; your truck will look exactly like the Trinity shell on the left, if you follow these steps.

STEP 1. WASH Clean the inside of the body with warm water and a drop of dish soap. Dry thoroughly.

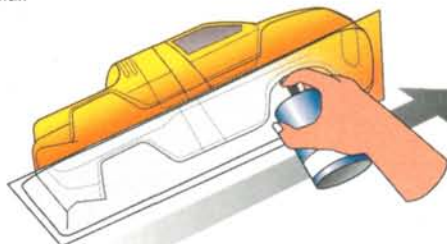
STEP 2. MASK Apply the window masks and carefully burnish the edges to keep paint sealed out.



STEP 3. SPRAY ORANGE Spray the lower half of the body with Pactra fluorescent orange spray paint. Let the first coat dry, then apply another and let it dry.



STEP 4. SPRAY YELLOW Spray the entire body, including the orange lower half, with Pactra fluorescent yellow paint. Apply two coats, allowing each to dry. The colors will still be translucent and generally crappy-looking, but that's normal.



STEP 5. BACK WITH WHITE Here's where the body comes to life. Spray on two coats of Pactra Sprint White, with drying time between the coats. The colors will now be full-on fluorescent with an even fade from orange to yellow.

PRO-LINE

All of Pro-Line's Maxx bodies include overspray film, window masks and loaded decal sheets. Most fit the T-Maxx and E-Maxx directly, but the SUV-style, high-back designs require extra-long rear body mounts. No worries there: Pro-Line includes the long body mounts with the bodies that need them! You can also buy the body mounts separately for use with other brands.



FORD EXCURSION

BODY NAME	ITEM NO.	PRICE	FEATURES
Ford F350	3096-00	\$26	M O S
Ford Excursion	3099-00	\$28	M O S X
Chevy Silverado crew cab	3100-00	\$26	M O S
Humm-Vee Urban	3104-00	\$28	M O S
Humm-Vee Militia	3105-00	\$30	M O S X
Early '50s Chevy pickup	3106-00	\$26	M O S
Early '50s Chevy panel	3107-00	\$28	M O S X
Peterbilt Big Rig	3111-00	\$28	M O S
Chevy Suburban	3112-00	\$28	M O S X
GMC Sierra LP	3124-00	\$26	A M O S
Jeep CJ8	3117-00	\$28	M O S
Cadillac Escalade	3118-00	\$28	M O S X
Dodge Power Wagon	3138-00	\$28	M O S
F-350 extended	3141-00	\$28	M O S
Maxx Crowd Pleazer	3144-00	\$28	A M O S

PRO-LINE (909) 849-9781; pro-lineracing.com.



GMC SIERRA LP

DON'T FORGET TRAXXAS!

IF YOU LOVE your stock Maxx body but want different graphics, or the same graphics in different colors, or you just want to replace your thrashed-out body with a duplicate replacement, then turn to Traxxas. The E-Maxx, T-Maxx and SportMaxx are all available in your choice of four ProGraphix color schemes, and all can be purchased separately. All include blackout decals for the windows as well as headlight, taillight and grill decals plus all sorts of Traxxas and Maxx logos. And if it's classic T-Maxx lines you're after but you'd prefer to paint your own design, the stock Maxx bodies are also available in clear.



PARMA

Parma offers many of its bodies factory-painted, which leaves only the trimming and mounting to you. With the exception of the Fire truck, all the Parma bodies in this layout have factory-paint jobs. If you go for a clear shell instead, you'll find window masks in the package, along with decals, instructions and wing hardware (if the body includes a wing, that is).

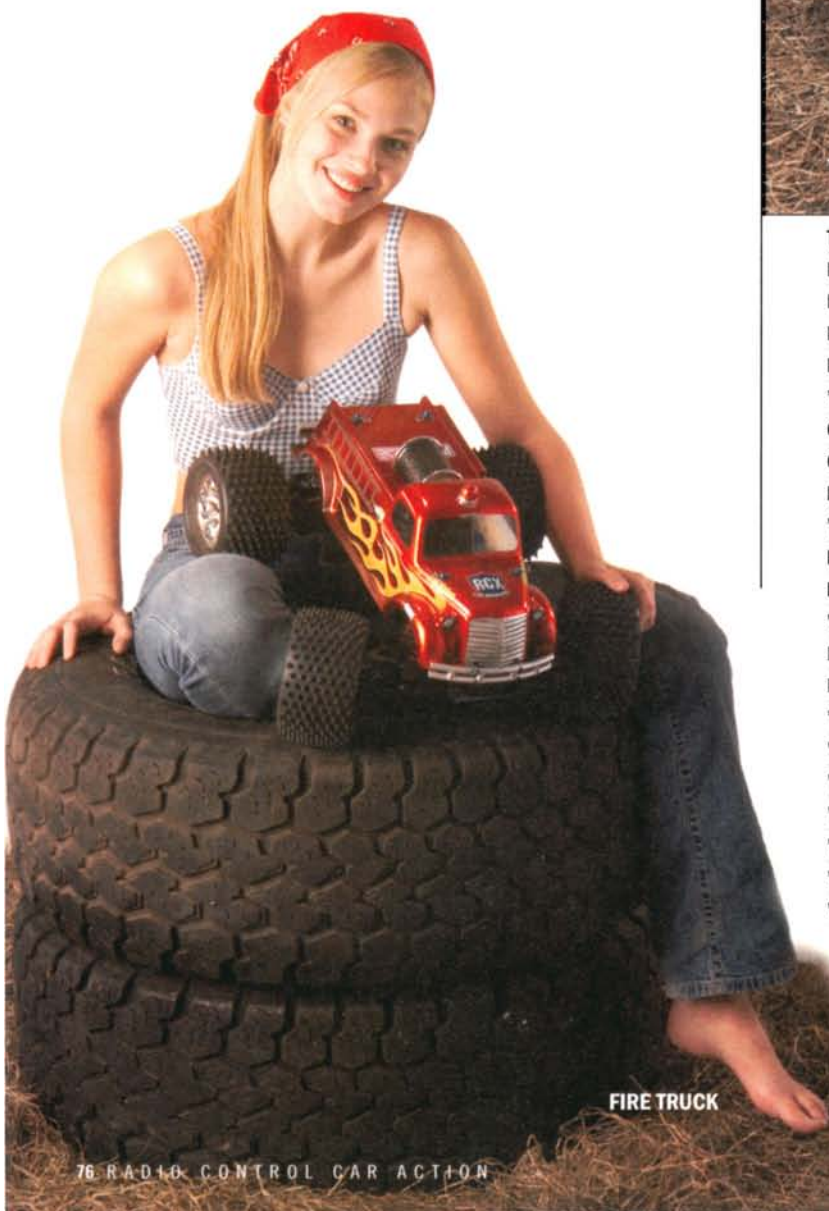
BODY NAME	ITEM NO.	PRICE	FEATURES
Fire truck	10116	\$26.99	M S
Team Meents monster truck	10118	\$33.99	M S
Team Meents (painted)	10118P	\$43.99	P S
Dodge Ram quad cab	10122	\$23.99	M S
Dodge Ram truck	10123	\$23.99	M S
Spiderman monster truck	10128	\$33.99	M S
Wolverine monster truck	10129	\$33.99	M S
Bulldozer monster truck	10130	\$33.99	A M S

BODY NAME	ITEM NO.	PRICE	E-MAXX
Dodge Ram (direct fit)	10135	\$23.99	A M S
Dodge Ram (painted, direct fit)	10135P	\$41.99	A P S
Ford 350 (direct fit)	10139	\$23.99	A M S
Ford 350 (painted, direct fit)	10139P	\$41.99	A P S
Chevy Silverado (direct fit)	10140	\$23.99	A M S
Chevy Silverado (painted, direct fit)	10141P	\$41.99	A P S
Sudden Impact	10148	\$29.99	M S
West Virginia Mountaineer	10149	\$29.99	M S
Prowler/Predator	10151	\$32.99	M S
Black Painted Prowler/Predator	10151P	\$42.99	P S
Chevy monster truck	10153	\$27.99	M S
Toyota Tundra	10155	\$23.99	A M S
Toyota Tundra (painted)	10155P	\$41.99	A P S
Toyota Tundra (direct-fit "T")	10156	\$23.99	A M S



TOYOTA TUNDRA (PAINTED)

Toyota Tundra (painted, direct fit)	10156P	\$41.99	A P S
Dodge Ram extended cab	10158	\$23.99	M S
Dodge Ram extended cab (painted)	10158P	\$41.99	P S
Bigfoot Chromalusion extended cab	10159	\$33.99	M S
Bigfoot Chromalusion (painted)	10159P	\$43.99	P S
'99 Chevy Silverado Z71	10161	\$23.99	M S
Grave Digger	10165	\$33.99	M S
Grave Digger (painted)	10165P	\$43.99	P S
Ford F350 wide	10170	\$23.99	M S
'99 Ford F350 extended cab	10173	\$23.99	M S
Ford F150 monster truck	10188	\$24.99	M S
Ford Sport Trac	10192	\$23.99	M S
'95 Dodge Ram	10194	\$23.99	M S
Dodge Sidewinder	10195	\$23.99	M S
Dodge Dakota	10197	\$23.99	M S
'97 Ford Bigfoot	10199	\$30.99	A M S
'97 Ford Bigfoot (painted)	10199P	\$40.99	A P S
'97 Ford F150	10204	\$23.99	M S
'91 Bigfoot	10293	\$29.99	M S
'34 Ford truck	10304	\$23.99	M S
'53 Ford truck	10313	\$23.99	M S
'57 Chevy truck	10325	\$25.99	M S
Ford Splash truck	10380	\$23.99	M S
'94 Dodge Ram truck	10388	\$23.99	M S
'94 Dodge Ram truck (painted)	10388P	\$36.99	P S
Chevy S-10	10392	\$23.99	M S



FIRE TRUCK

PARMA/PSE (440) 237-8650; parmapse.com.

ATOMIK

Atomik has just one Maxx-body design (for now)—a Ford F-350—but what a selection of colors! The factory-finished designs are fully trimmed and ready to be mounted, and the “glass” is actually a separate part of the body that is plugged in with industrial-strength, double-sided tape. That’s how Atomik can offer screen-printed graphics with clear windows; printed bodies usually require blacked-out windows. Prefer an SUV look? A Chevy Suburban body is in the works!

BODY NAME	ITEM NO.	PRICE	FEATURES
F-350 Clear	100-000	\$22.99	O S
F-350 Camo Nuclear	100-001	\$36.99	P S
F-350 Camo Snow	100-002	\$36.99	P S
F-350 Camo Water	100-003	\$36.99	P S
F-350 Camo Woods	100-004	\$36.99	P S
F-350 Flame Black	100-005	\$36.99	P S
F-350 Flame Yellow/Green	100-006	\$36.99	P S
F-350 Flame Blue/Silver	100-007	\$36.99	P S



FORD F-350 FLAME

BODY NAME	ITEM NO.	PRICE	E-MAXX
F-350 Shred Gray/Black	100-008	\$36.99	P S
F-350 Shred Yellow/Blue	100-009	\$36.99	P S
F-350 Shred Red/Silver	100-010	\$36.99	P S
F-350 Jagged Stripes Red	100-011	\$36.99	P S
F-350 Jagged Stripes Green	100-012	\$36.99	P S
F-350 Jagged Stripes Purple	100-013	\$36.99	P S

ATOMIK R/C (805) 499-7003; atomikrc.com.

details, details, details

WANT TO REALLY set your ride apart from the rest? It's all in the details, as they say. Here are some easy-to-add body mods that will make your truck more trick.

■ **ROLL THE WINDOW DOWN.** Just trim the upper portion of the window as shown; the bigger the gap, the more “rolled down” the window will appear.



■ **DUAL PIPES.** We could tell you how to cut and polish aluminum tubes to create your own pipes, but it's way easier to just pick up a set of RPM Fat Boy pipes. They servo-tape right in and cost less than 5 bucks each.



■ **LIGHT BAR.** The OFNA Titan light bar can be retrofitted to just about any flatbed body by making four holes. It's item no. 18159.



■ **ROLL CAGE.** You don't have to solder brass tubes to get that roll-cage look; just paint soda straws to suit the bodywork and stick them inside the body with servo tape or Shoe-Goo.



■ **ADD A HEMI.** Would you like to see a blown V-8 rising out of your truck's engine bay? This month's edition of “4X4” shows you how. Turn to page 186.



earn your wings

A REAR WING adds instant style to any truck body, and installing one is easy. Here's how.



■ **THE BIG-BUGGY-WING LOOK.** Buggy wings have been popular Maxx additions ever since Kevin Hetmanski combined one with Pro-Line's Peterbilt body for our August 2001 cover. To install one on your truck, install a Pro-Line tall rear body mount (item no. 6003-00) through the top of the body; use body clips to secure it in the rear shock tower. Drill the wing to accept the body mount and use a pair of body clips to hold it down.

■ **THE STREET-WING LOOK.** Protoform's molded-plastic touring car wings look great on flatbed bodies, and they're easy to mount. Position the wing over the bed, and mark the hole locations with a permanent-ink marker. Make a pair of holes in the body to match and attach the wing with four 4-40 screws. We added a set of standoffs from a Protoform Porsche 911 GT-1 body for a high-rise look.



HOT BODIES

Hot Bodies has three looks for the HPI Savage and that makes them Maxx bodies as well, since those two trucks' body posts, fuel tanks and engines are identically placed. The Excursion and Suburban shells have realistic lines, and the SS-R show truck brings a unique look to the Maxx universe.



BODY NAME	ITEM NO.	PRICE	FEATURES
Excursion	10801	\$21	M O S
SS-R	10802	\$21	M O S
Suburban	10805	\$21	M O S

HOT BODIES 909-296-9340; hotbodiesonline.net.

DYNAMITE

Dynamite went for a radically different look with its Triton design, which features swoopy side cladding and Celica-ish headlights that give it futuristic flavor. Standard and extended-cab versions are offered, and a Dodge Ram body is now available as well. All of the bodies include window masks and decals. ■

BODY NAME	ITEM NO.	PRICE	FEATURES
Triton T-Maxx	DYN3800	\$19.99	M O S
Triton E-Maxx	DYN3802	\$22.79	M O S
Dodge extended cab	DYN3803	\$22.79	M O S

DYNAMITE; distributed by Horizon Hobby (800) 338-4639; horizonhobby.com.



TRITON

78 RADIO CONTROL CAR ACTION

track
test

1/5-SCALE GAS by Paul Onorato

H.A.R.M. Opel Astra Basic RTR



COOKIN'

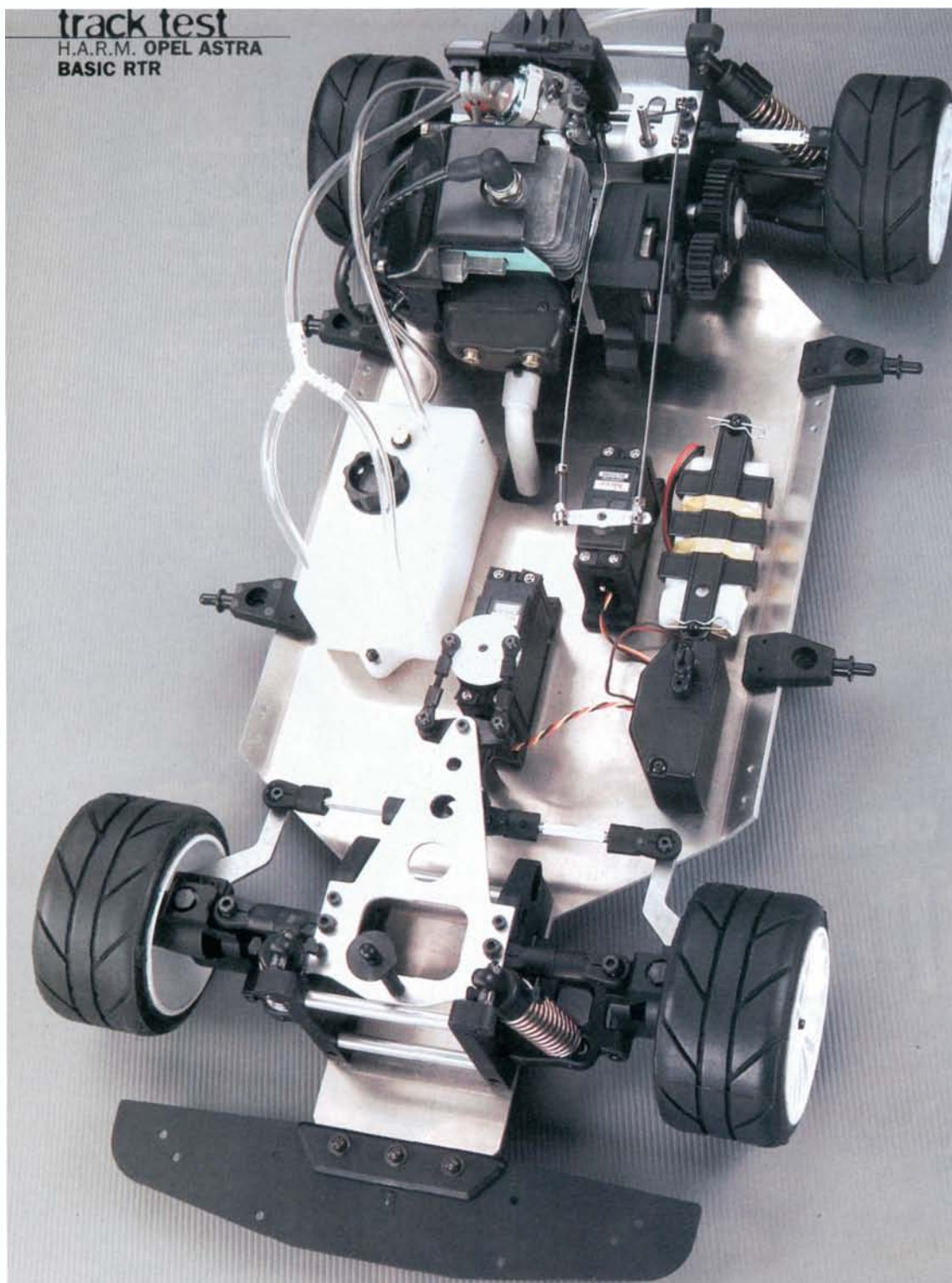
PHOTOS BY WALTER SIDAS

IF YOU'VE JUST GOT TO HAVE THE BIGGEST, BADDEST RC CAR ON THE BLOCK, your search is over. With 23cc of gasoline-burning, 2-stroke power under its nearly 3-foot-long Opel body, the H.A.R.M. Basic $\frac{1}{5}$ scale out-powers and out-sizes all other types of fuel-powered RC machines. Of course, you'd expect any vehicle that's $\frac{1}{5}$ scale to be big, but you probably wouldn't expect it to be ready to run and simple to work on. The Basic is both; it arrives fully assembled and painted with an installed JR Racing XR-3 FM radio system and Hitec large-scale servos, and the 2WD chassis is very much like the $\frac{1}{10}$ -scale hardware you're used to—only bigger. Getting into big-time RC has never been easier; if you can stick decals onto the body and zip-tie a battery pack into the chassis, you can handle the H.A.R.M. Opel Astra Basic RTR.



With gas

track test
H.A.R.M. OPEL ASTRA
BASIC RTR



"Bulletproof" is the first word that comes to mind when you check out the car's construction. The steering links and camber links are adjustable for fine-tuning. Ball bearings on each axle ensure almost friction-free spinning.

DATA CENTER

VEHICLE TYPE 1/5-scale,
on-road 2WD

BEST BUYER Intermediate to
advanced RC enthusiasts who are
looking for big-scale excitement

KIT RATINGS (poor, satisfactory,
good, very good, excellent)
Instructions Satisfactory
Parts fit and finish Good
Durability Very good
Overall performance Good

SPECIFICATIONS

MANUFACTURER H.A.R.M.
MODEL Opel Astra DTM Basic RTR
DISTRIBUTED BY Horizon Hobby
SCALE 1/5
PRICE \$1,499.99
(varies with dealer)

DIMENSIONS
Wheelbase 21 in. (535mm)
Width 16 in. (410mm)

WEIGHT
Total, as tested 21.2 lb. (9,611g)

CHASSIS
Type One-piece plate
Material 4mm aluminum with
radiused edges

DRIVE TRAIN
Type 2WD exposed gear drive
Primary 24T clutch bell/
44T spur gear
Primary ratio 1.83:1
Transmission ratio 3.33:1
Final drive ratio 6.09:1
Drive shafts Dogbone
Differential Bevel gear
Bearing type Metal-shielded

SUSPENSION
Type Lower H-arm with adjustable
upper link
Shocks Plastic-body, oil-filled,
coil-over

WHEELS
Type One-piece, plastic multispoke

TIRES
Type Mounted and glued
low-profile street treads

ENGINE AND ACCESSORIES
Engine 23cc Solo gasoline
Carburetor Twin-needle Walbro
with primer bulb
Exhaust Canister-type
Starter Pull-start
Tank 500cc with threaded filler
cap and built-in fuel filter

THE H.A.R.M.'S HUGE, 4MM-THICK CHASSIS
PLATE IS SPACIOUS AND FEATURES RADIUSED
EDGES TO INCREASE ITS OVERALL STRENGTH.

KIT FEATURES

CHASSIS. The H.A.R.M.'s huge, 4mm-thick chassis plate is spacious and features radiused edges to increase its overall strength. The front and rear bulkheads are made of plastic composite with aluminum for bracing, and the radio gear and fuel tray sit between them. There isn't a radio tray, but each electronic component is securely mounted on its own plastic supports. A plastic case conceals the receiver and shields it against moisture and dirt. A large plastic bumper protects the front end.

DRIVE TRAIN. The 2WD drive train is straightforward. Its 24-tooth clutch bell is attached to a 44-tooth spur gear that's mounted on a layshaft that has a 15-tooth gear at the opposite end; here, the gear meshes with a 50-tooth diff gear. The diff is a large bevel-gear unit with an aluminum housing that takes up most of the room between the bulkhead. The diff gear is so large that it pokes out through the bottom of the chassis, but the car's extra ride height should prevent the gear from bottoming out. Steel dog-bones connect the diff and transfer the power to the wheels, and a complete set of ball bearings is standard.

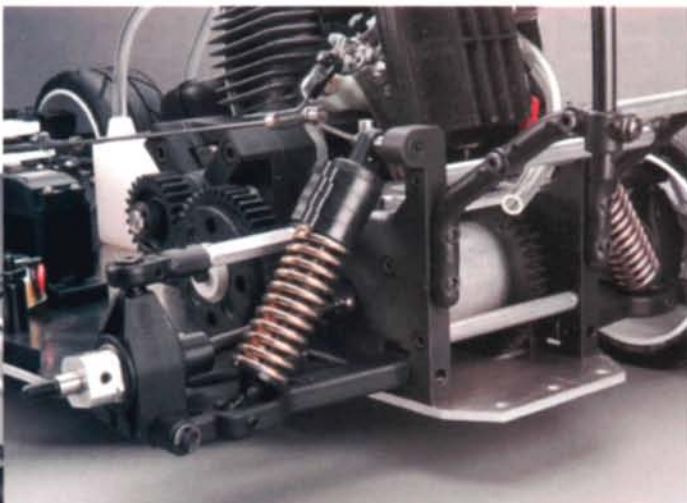
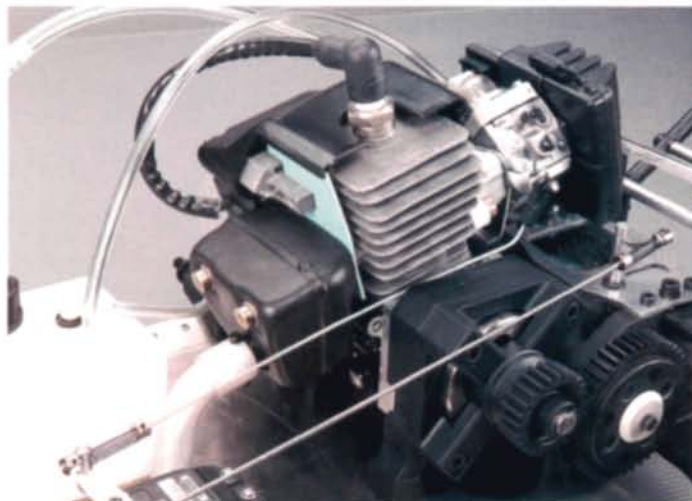
A vital component of the drive train is the braking system. I was a little surprised that H.A.R.M. employs just one brake disc to stop such a heavy car; testing will reveal its capability. The fiber-disc brake is keyed to the diff with cam-activated steel calipers.

ENGINE AND ACCESSORIES. The biggest difference between a 1/5-scale vehicle and other engine-powered RC cars is the powerplant. These big

cars use 2-stroke gasoline engines like those used in chain saws and weed cutters. In this case, a 23cc Solo engine with a pull-starter gets the Opel under way. A twin-needle Walbro carb with primer bulb controls the fuel flow. The carb uses a paper-element air filter so the engine breathes clean air.

The no-frills-design exhaust system uses a canister-type muffler with a cast-aluminum tube to direct the exhaust out through the bottom of the car. For improved performance and increased horsepower, a tuned pipe is available. A 500cc fuel tank with a threaded fuel cap and built-in fuel filter allows the car to run for approximately 40 minutes.

SUSPENSION AND STEERING. The suspension design is basically a giant-size version of the 1/10-scale hardware we're used to seeing. Thick, plastic, lower H-arms are used on the front and rear, and adjustable upper links allow camber to be changed. The hub carriers and steering knuckles appear to be bulletproof. An aluminum arm is used on the steering knuckle to minimize the risk of breakage where the steering linkage is attached. The steering is controlled by a 1/4-scale servo that has been fitted with dual-control arms to allow a push/pull setup for maximum turning power.



Above: giant coil-over shocks with preload collars provide the damping. The upper camber links, lower H-arms and uprights are built to withstand the excessive forces that these larger cars produce.

Left: the big 23cc Solo engine generates plenty of power to get the big car humming. Large, robust gears can easily handle the engine's muscle, and they should last for a long time.

ELECTRONICS & ACCESSORIES

JR RACING XR3 TRANSMITTER AND R135 RECEIVER. The JR XR3 programmable 3-channel transmitter isn't an average RTR radio. It's an FM system with many features: digital trims, travel adjust, steering dual rates, subtrim, servo-reversing, adjustable steering-wheel tension and a built-in charging jack. In addition to the standard features, it also has a 3-model memory that allows you to use the radio for more than one car and not have to change the settings. The XR3 system also allows excellent reception, which is important for a 1/5-scale car.

HITEC HS-700BB THROTTLE/BRAKE SERVO. The throttle and brake are controlled by a 1/4-scale 700BB servo with a claimed 174 oz.-in. of torque and a 0.17-second transit time.



HITEC HS-805BB STEERING SERVO. At an incredible 343 oz.-in. of torque and a 0.14-second transit time, the 805BB servo supplies plenty of oomph to counteract the substantial centrifugal force of the H.A.R.M.'s large-diameter wheels, and they steer the 21-pound car effectively.

TRANSMITTER AND RECEIVER BATTERIES AND WALL CHARGER. A 5-cell, sub-C 1700mAh battery pack powers the radio system on the chassis for about 50 minutes of run time. Eight, AA rechargeable batteries are also included for the transmitter. To charge the batteries, a slow-charge wall charger comes with the RTR; it will take about eight hours to charge the batteries. The charger has two leads—one with a plug for the receiver pack and another for the transmitter.

YOU'LL NEED

- High-octane gasoline
- Gas can
- 2-stroke, pre-mix oil

FACTORY OPTIONS

- Front disc brakes—item no. 1533700
- Airbox—1536620
- Alloy oil damper set—1533690
- Damper clip set—1533650
- Damper spring set—1533649
- Tuned-pipe set—1536610
- Alloy clutch mount—1533780

track test

H.A.R.M. OPEL ASTRA BASIC RTR

A single bellcrank is fitted with a non-adjustable spring to protect the servo in a crash, and adjustable steering links are connected to the steering knuckles.

Giant, plastic-body, oil-filled shocks and stiff springs are mounted at each corner of the chassis. They arrive assembled and oil-filled and don't require tweaking. The lower shock-mounting positions are protected because they are set inboard of the lower H-arm; if the car hits a raised structure, the shocks aren't likely to be damaged.

BODY, WHEELS AND TIRES. The H.A.R.M. RTR is offered with a choice of three factory-painted polycarbonate bodies: the Opel Astra DTM (shown here), a Mercedes-Benz CLK-DTM and a custom Ford Outlaw pickup. The body is well

painted, and the windows have been left clear instead of being covered with black stickers to simulate glass. All I had to do to finish the body was to cut out the wing and apply the stickers. The Opel is modeled after a full-scale racecar sponsored by Jägermeister, but unfortunately, these were the only stickers that weren't included. I cut some out of vinyl (you can purchase adhesive-backed vinyl at sign shops).

The wheels and tires are mounted and glued for you. Good thing; the grooved, hard-compound tires are incredibly hard, and it would be a bear to mount them. The one-piece multispoke wheels are solid and capture the look of their full-size counterparts. A metal collar reinforces the area where the hub is keyed to the wheel.

IT'S A GAS

The H.A.R.M. Basic RTR runs on gasoline, which has to be handled differently than the more common nitro fuel used in $\frac{1}{10}$ - and $\frac{1}{8}$ -scale vehicles. The biggest difference between gasoline and nitro is that there aren't any lubricants in gasoline to prevent friction from damaging your engine. So before you fill the tank, you must mix oil with the gasoline to a specific ratio. H.A.R.M. recommends a ratio of 25:1 (25 parts high-octane gasoline to 1 part oil). Hardware stores, motorcycle shops and marine suppliers carry the 2-stroke oil that is intended to be mixed with gasoline—usually called “pre-mix oil.” Be sure that you mix the oil and gasoline in an approved gasoline container and not in the tank of your RC car. Store the leftover fuel in a garage or shed where there is plenty of ventilation—never indoors.

PERFORMANCE



I ran the Opel DTM in a wide-open parking lot to give it plenty of room. A car of this size and weight could seriously damage anything it hits, so be careful when you drive it. When the engine had warmed up, it was time to test the car. My experience with other $\frac{1}{5}$ -scale cars showed me that they are slow off the line, but that isn't the case with the H.A.R.M. Basic RTR. The power is right on tap for hard launches; it even makes the rear tires spin.

No other RC vehicle can produce the same cool, deep loud rumble as a $\frac{1}{5}$ -scale car. The 23cc Solo engine started easily and didn't require any adjusting to maintain a smooth idle. I can see how easily I could be spoiled by a gas-powered car: there aren't any glow igniters to have to remember to take with you; just fuel up the car, turn on the radio and pull the starter cord.

The big car gets up to speed relatively fast, and I was curious to discover whether it was indeed reaching the 40mph claimed top speed.

Our radar gun confirmed a best speed of 41.3mph. At this speed, the car's handling was very stable and predictable, but bringing the Basic RTR to a stop

from that speed isn't easy. The single, fiber-disc brake was outmatched by the heavy car's weight, and it took a lot of real estate to stop. I'd opt for the optional front disc brakes to decrease the braking distance.

I set up a small roadcourse with corner dots to see how it would

NO OTHER RC VEHICLE CAN PRODUCE THE SAME COOL, DEEP LOUD RUMBLE AS A $\frac{1}{5}$ -SCALE CAR.

handle corners. As is typical of a rear-wheel-drive car, the $\frac{1}{5}$ -scale RTR pushes (understeers) when diving into a turn, but with slight braking and less speed carried into the corners, it was more manageable. If you get on the throttle too quickly, the rear end can come around; finesse with the throttle is important when you drive this car.

DISLIKES

- Big price tag.
- Could use more stopping power.
- No on/off switch for the receiver.

THE VERDICT

The H.A.R.M. Basic RTR is one of the most complete $\frac{1}{5}$ -scale kits available. The assembled chassis with painted body, an installed programmable FM radio system and a complete set of rechargeable batteries can be running in no time. And when these features are combined with a dependable, easy-to-start engine and undemanding driving characteristics, that means anyone can drive one of these big cars. This isn't a high-tech kit by $\frac{1}{5}$ -scale standards, but it does offer the necessary ingredients for fun, and that's what RC is all about.

SOURCE GUIDE

H.A.R.M. distributed by Horizon Hobby.

HITEC RCD INC. (858) 748-6948; hitecrd.com.

HORIZON HOBBY (800) 338-4639; horizonhobby.com.

JR RACING distributed by Horizon Hobby.

LIKES

- 40-minute run time.
- Spacious chassis layout is easy to work on.
- Sharp-looking, factory-painted body.
- Powerful engine.

track
test

1/8-SCALE NITRO by George M. Gonzalez

HPI Savage 21



PHOTOS BY WALTER SIDAS



HPI DROPS THE BIG ONE

WITH ITS TWIN-PLATE, LADDER-STYLE CHASSIS, oversize suspension components and eight of the longest shocks I've ever seen, there's no mistaking the HPI Savage 21 for any other 4WD nitro monster truck. The HPI design team loaded the truck with all the features that monster-truck enthusiasts could ask for: big-block .21 power, auto-shifting 2-speed transmission with metal gears, oversize fuel tank, big, aggressive monster-truck tires mounted on chrome rims, tons of suspension travel and 100-percent factory assembly. We whetted your appetite with the December Issue's "First Look," and now the time has come to test the Savage in full production trim. Let's get down to business!

track test

HPI SAVAGE 21



DATA CENTER

VEHICLE TYPE 4WD nitro monster truck

BEST BUYER Beginners, racers and monster-truck fans

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Very good

Parts fit/finish Excellent

Durability Very good

Overall performance Very good

SPECIFICATIONS

MANUFACTURER HPI

MODEL Savage 21

SCALE 1/8

PRICE \$449 (varies with dealer)

DIMENSIONS

Wheelbase 3.25 in. (336mm)

Width 16.8 in. (426mm)

WEIGHT

Total, as tested 11.2 lb. (5.08kg)

CHASSIS

Type Twin vertical plate

Material Aluminum

DRIVE TRAIN

Type Shaft-driven 4WD

Primary 14T clutch bell/53T spur gear

Transmission ratio (1st gear/2nd gear) 7.33:1/5.08:1

Final drive ratio (1st gear/2nd gear) 27.22:1/18.88:1

Drive shafts Steel dogbones

Differentials Bevel gear

Bearing type Rubber-sealed bearings

SUSPENSION

Type Lower suspension arm/upper control arm

Damping 8 extra-long composite-plastic shocks

WHEELS

Type Plastic 5-spoke chrome

TIRES

Type HPI off-road lugged tires with foam inserts

ENGINE AND

ENGINE ACCESSORIES

Engine HPI Nitro Star 21BB

Carburetor 3-needle slide carb

Starter Pull-start

Exhaust Cast-aluminum header and composite-plastic single-chamber pipe

Fuel capacity 160cc

THE SAVAGE 21'S TWIN VERTICAL PLATE (TVP) CHASSIS SETS IT APART FROM MOST OTHER BIG-WHEEL MONSTER TRUCKS.

KIT FEATURES

CHASSIS. The Savage 21's twin vertical-plate (TVP) chassis sets it apart from most other big-wheel monster trucks. The 2.5mm-thick-aluminum, natural-finish chassis plates are arched to provide additional ground clearance. The transmission, radio box and purple-anodized-aluminum engine-mounting platform are installed between the two chassis plates to form a rigid center structure. A molded radio-box cover that's secured with three body clips does a good job of protecting the electronics from dirt and moisture. A functional aluminum roll bar protects the engine's cooling head (and body) and doubles as a carrying handle.

The front and rear diff cases, bulkheads and shock towers are mounted on aluminum subassemblies (also purple-anodized) and are reinforced by molded skidplates. The front and rear subassemblies are attached to the center structure, and the completed chassis is as rigid as a brick. Rugged tube bumpers secured to the front and rear suspension assemblies provide exceptional crash protection. The scale-looking running lights mounted on the front bumper don't actually work, but they can be made functional with a lighting kit and a little ingenuity.

DRIVE TRAIN. The Savage 21 features a rugged shaft-driven 4WD system that's designed to handle the power of the included big-block 1.9hp engine. A 14-tooth steel clutch bell mates with a 52-tooth slipper clutch-equipped spur gear. The slipper clutch is a heavy-duty unit with a steel slipper plate and a large-diameter Rulon pad that's keyed to the spur gear.

The auto-shifting 2-speed transmission features a metal internal gear train. The 18/23-tooth top gear, 32-tooth center drive gear and 29-tooth idler gear are metal castings for extra durability. The 44/39-tooth first and second drive gears that are attached to the 2-speed clutch housing are the only plastic gears inside the tranny. All of the gears spin on maintenance-free rubber-sealed ball bearings, and an access hole on the side of the transmission case allows you to slide in a 2mm Allen wrench to make shift-point adjustments. The shift-point access hole is covered with a rubber cap to prevent dirt and other debris from contaminating the internal gears.

Beefy, 4mm-thick-steel dogbones transfer the power from the



Above: the Savage's twin, vertical-plate frame—known as a "ladder-type"—is compact and very rigid. Note the front and rear skidplates that protect the front and rear gearboxes.

Right: its massive suspension travel gives the Savage very plush damping that can absorb big bumps and jumps. The double oil-filled shocks are the longest we've ever seen.

transmission to the front and rear diffs via steel outdrive cups that mate with the internal hardened-steel ring and pinion gears. Steel dogbones are used again to drive the oversize 8mm stub axles installed in the hub carriers. The stub axles spin on rubber-sealed bearings to provide smooth, dirt-resistant operation. Interestingly, the stub axles on the right side of the truck use standard locknuts, while the stub axles on the left side use reverse-threaded locknuts to ensure that they remain tight during operation. Fourteen-millimeter aluminum hex hubs allow standard offset wheels and tires designed for the T-Maxx to be used. A thick fiber-disc brake with steel calipers provides the stopping power. The brake rotor floats on a hex-shape molded sleeve that slides over an outdrive cup on the center tranny idler shaft.

SUSPENSION AND STEERING. The extra-long lower suspension arms are more than 1 inch thick at the shock mounts and more than 1/4 inch thick at the pivot points. The beefy lower suspension arms pivot on oversize 4mm-thick hinge pins that are supported at both ends with 4mm-diameter aluminum hinge-pin braces and are captured by



ELECTRONICS & ACCESSORIES

INCLUDED



HPI TF-4 RADIO SET. The Savage 21's TF-4 27MHz AM transmitter features a third-channel switch on the transmitter's thumb rest that makes it easy to shift from forward to reverse, but to give the Savage 21 reverse capability, you'll need the optional reverse mechanism and an extra servo. The transmitter also features a low-battery indicator, steering and throttle trims, three separate servo-reversing switches and a steering dual-rate adjustment knob.

The HPI RF-2 AM receiver actually has four channels—odd, considering that the Savage 21 requires only two channels to operate it (three, if you go for the reverse option). A standard-duty SF-1 servo operates the throttle lever and brake actuator, while an SF-2 high-

YOU'LL NEED

- 12 AA batteries
- Fuel
- Fuel bottle
- Glow igniter

FACTORY OPTIONS

- Reverse module—item no. 87032

torque servo with 90 oz.-in. of torque and a relatively fast .16-second transit speed swings the bellcranks.

TOOLS AND OTHER ACCESSORIES. A four-piece Allen wrench set, a box wrench, two prelubricated air-filter elements, extra linkage-rod ball ends and extra servo horns to fit Hitec and Airtronics servos are included. A quick-start guide, complete step-by-step assembly instructions and a separate instruction booklet for the Nitro Star 21BB engine, including break-in instructions, are also included.



THE BRAINS BEHIND THE SAVAGE

A complex project such as the Savage 21 is entrusted to the creativity of many talented designers and engineers, but lead designer Hidekazu Ito (the man behind the Nitro MT, RS4 Pro 3 and the original RS4) and Akira Kogawa (creator of the Micro RS4 and Rush) were key to the development of HPI's first big-block monster truck. We tapped Akira for his insights on the design process.

RCCA: Which key features of the truck were established during the drawing-board stages of the design?

Akira Kogawa: The truck had to be fun to drive and extremely durable. We also wanted it to be good-looking and different from anything else that was available. Because we knew the truck was going to be powered by a big-block 21, we designed the chassis, suspension and drive

train to be able to handle the power. We also wanted the truck to use the same bodies and tires as the T-Maxx; there are so many body, wheel and tire options for the T-Maxx that it would have been a shame not to take advantage of the huge after-market support.

RCCA: Why break tradition and go with a twin-plate chassis instead of the more common flat-plate design?

AK: We like a challenge! Again, we wanted the truck to be different, and we felt that the dual-plate design makes the truck look more scale. The dual-plate design opens the door to exciting options such as carbon-fiber chassis plates and anodized chassis plates that will make the truck look even more impressive. Looks aside, the twin-plate chassis is also extremely rigid, and this allows the suspension to do its job more effectively. The chassis actually makes a dramatic statement. It houses all the components very well and hides all the wiring and linkages to make a clean-looking platform.

RCCA: Will there ever be an unassembled Savage 21 kit for those who enjoy building or like to choose their own radio gear?

AK: At this point, we are looking at that as an option. We can't make everything that everyone wants, but many hobbyists still prefer to build their models rather than buy them RTR. If we do make a kit, many details will need to be worked out. We already provide complete, step-by-step instructions with every Savage, so making a kit wouldn't be very difficult. If there is a demand for kits, we might consider offering them. Another point to consider is that the Savage 21 is a very specialized truck; it requires 10 or more hours of building time. The average monster-truck enthusiast would probably prefer to start playing right away instead of spending hours building the truck.

RCCA: The only option part available for this truck right now is the reverse module; does HPI plan to release other options? If so, what can we expect to see?

AK: Yes! We have a wide variety of option parts in the works. Carbon-fiber chassis plates, aluminum shocks, springs, wheels, tires, tire inserts, bodies, adjustable upper suspension arms, an engine-cooling head and an aluminum tuned pipe should all be available soon.

RCCA: Will we ever see an electric-powered Savage truck?

AK: We can't really rule anything out. As I said before, our plates are full right now. Getting the Savage 21 trucks out the door, making option parts and working on other projects are currently our priorities. Future motor and battery technology will ultimately determine whether we make an electric version. We'll just have to make a prototype and then see if it's as fun to drive as the nitro truck.



the molded skidplates. The narrow upper suspension arms also pivot on 4mm captured and braced hinge pins. Unfortunately, the upper arms are one piece and do not allow camber adjustment. Rugged caster blocks and steering knuckles are used to point the front tires where they need to go. Identical caster blocks and steering knuckles installed on the rear suspension arms provide adjustable rear toe-in. Additionally, the front and rear upper and lower suspension arms, skidplates, diffs and diff cases, body mounts, shock towers and shocks are all interchangeable from front to rear, and this means that you'll need to stock fewer spares in your pit box.

The chassis is supported by eight super-long composite-plastic shocks. Nearly 7 inches long, the Savage 21's shocks are the longest I've ever seen on an RC vehicle. They're similar in design to HPI's other bladderless, double O-ring-sealed shocks, but they're much longer. Bright red powder-coated springs are wrapped around the shock bodies, and clip-on preload spacers allow ride-height adjustment. To provide progressive damping (that is, the damping becomes stiffer as the shocks are compressed), the shocks are mounted outward on the suspension arms and inward on the shock towers. The laydown shocks are able to cycle quickly to handle the smaller bumps, and they provide the necessary damping when landing after big-air jumps. Body roll is also reduced by the laydown shock system to aid in cornering and overall handling.

Thick 4mm steering rods allow front and rear toe-in/out adjustment, but you have to remove one of the rod ends to make length adjustments. A pair of oversize bellcranks with 8mm-thick steering arms and a 6mm-thick molded drag-link pivot on bushing-equipped steel posts. The Savage 21's entire suspension and steering system looks extremely rugged and should be able to take a pounding.



The new Futaba-based HPI TF-4 radio is included. A 70 oz.-in. servo and a 4-channel receiver are included. A nice radio cover protects the radio gear, but the two clips that fasten the front of the cover are hard to reach and make radio removal and installation a little tricky.

ENGINE AND ACCESSORIES. The pull-start Nitro Star 21BB engine features an 11-fin, purple-powder-coated cooling head, a 3-needle slide carburetor with a 7mm



venturi and an ABC piston and sleeve. The exhaust is routed through a cast-aluminum manifold and a composite-plastic, single-chamber tuned pipe. A two-shoe clutch system with Teflon-coated clutch shoes is installed on a lightweight aluminum flywheel and is covered with a 14-tooth steel clutch bell. A small, single-element air filter is included and installed on the engine.



Thanks to the extra-large 160cc fuel tank, the Savage 21 goes a long way on a tank of fuel. The tank features a built-in primer, a spillway with runoff and a cap-mounted pressure-line pick-up. To cut down on maintenance, the fuel tank is mounted on the chassis' left side (directly across from the engine) and is held with body clips that can easily be removed.

BODY, WHEELS AND TIRES. The screen-printed, trimmed and detailed truck body is up to HPI's usual high standards. The silver, black and purple



Above: a large, 160cc fuel tank feeds the Savage's big-block engine and is easy to remove for cleaning and maintenance. Note the bellcrank that activates the slide carburetor. A disc-type slipper assembly mounted on the spur gear protects the drive train during hard jolts. **Left:** the Savage comes with the Nitro Star .21BB pull-start engine. It features ABC construction, a 7mm slide carburetor (with high- and low-speed mixture needles) and a large heat-sink head.

body features sharp lines, plenty of detail accents and good-looking graphics and decals. HPI plans to offer other body sets for the Savage 21 in the future, but it's nice to know that just about any body designed for the T-Maxx will fit the Savage 21. To cut down on setup time, chrome 5-spoke wheels and large lugged tires with foam inserts have been factory-bonded. HPI must have devoted a lot of R&D time to the tires because I've yet to find a surface on which the tires don't hook up.

THE COMPETITION

	CHASSIS	BALL BEARINGS	ENGINE SIZE	STARTER	PIPE	RTR	PAINTED	RADIO	PRICE	REVIEWED
Traxxas T-Maxx	3mm aluminum	Yes	.15	Electric	Plastic	Yes	Yes	Traxxas	\$399	11/02
OFNA Titan	2.5mm aluminum	Yes	.25	Pull-start	Aluminum	Yes	Yes	Airtronics	\$650	10/02
XTM X-Factor	3mm aluminum	Yes	.247	Pull-start	Aluminum	Yes	Yes	Hitec	\$450	1/02
Kyosho Mad Force	3mm aluminum	Yes	.21	Pull-start	Aluminum	No	No	Not incl.	\$480	8/02
HPI Savage 21	2.5mm aluminum	Yes	.21	Pull-start	Plastic	Yes	Yes	HPI	\$449	3/03

PERFORMANCE



click trip
RCCARACTION.COM
SAVAGE 21 OFF-ROAD
ACTION VIDEO

EVEN DROPS FROM
6-FOOT GAPS DIDN'T FAZE THE
SAVAGE'S SUPPLE SUSPENSION.

After properly breaking in the Savage 21's engine and tuning its carb, I proceeded to tear up my front yard with it. I was immediately taken by the truck's nimble handling and strong braking; I was able to keep the truck totally in control while blasting around the relatively confined area. On the asphalt, the rear end of the truck squatted whenever I hit the gas, and it accelerated quickly without any drama whatsoever. The Savage 21 won't pull wheelies on demand because the suspension travel soaks up the wheelie before it can happen, but I'll take controlled acceleration over uncontrolled wheelstands any time.

The stock shift point on the test truck was set for a late shift engagement; the engine wound out considerably before it engaged second gear. I also noticed that the engine hesitated momentarily whenever the tranny shifted into high gear. It was about 85 degrees outside, and the engine was running at approximately 236 degrees—normal running temperature. I decided to lean out the high-speed needle valve another 1/8 turn to see whether the engine would rev a little faster.

That did the trick; the truck was noticeably faster, and the hesitation I encountered when I shifted into high gear had disappeared. The truck's acceleration made me sit up and take notice; radar confirmed a 31mph top speed. After several high-speed passes, engine temperatures remained steady at around 260 degrees.

There weren't any obstacles on my street that the Savage 21 couldn't handle, so I packed up my gear and headed to a nearby motocross freestyle track. Because of recent wet weather, the motocross riders had left giant, 4-inch-deep tire tracks all over the course. These brutal conditions posed no problem for the Savage 21; its suspension soaked up all the bumps and ruts without getting out of shape, and the tires had no problem finding traction.

The Savage 21 seems designed to take to the air. The truck flies straight, and landings are always smooth and under control. Even drops from 6-foot gaps didn't faze the Savage's supple suspension. Unfortunately, the dusty, dirty conditions of my jump site proved too much for the stock air filter; I had to clean and relube its element after every two tanks of fuel to prevent the engine from overheating and flaming out. Installing a larger air filter will help the engine breathe better and provide improved filtration in extremely dusty conditions.

I decided to end the day with a giant hill climb. I found one three stories high and zoomed the Savage 21 up its rocky, sandy face. The Savage 21 made it three quarters of the way up before the face of the hill became impossibly steep and its tires lost their grip, leaving the truck to tumble down end over end. I returned to this "mountain" several times during testing and never bent or broke anything. The Savage is built like a tank!

THE VERDICT

The Savage 21 didn't just live up to all of my expectations; it redefined my standards and set a new benchmark for what I feel makes a truly great monster truck. The Savage 21 is fast, handles exceptionally well and is the only truck I've tested that can land from a 6-foot drop without bottoming out the chassis. Factor in excellent factory assembly, HPI's reputation for quality and total compatibility with the huge well of aftermarket bodies, wheels and tires for the Traxxas T-Maxx, and the HPI Savage is a must-see for any big-tire-truck buyer.

LIKES

- Extremely durable design.
- Extra-large fuel tank.
- Stadium-truck-like handling.
- Excellent quick-start guide and complete step-by-step assembly instructions.

DISLIKES

- Included air filter is too small and requires frequent cleaning.
- Very few suspension-tuning options.

SOURCE GUIDE

DURATRAX distributed by Great Planes Model Distributors (800) 682-8948; duratrax.com.

HPI RACING (949) 753-1099; hpiracing.com.

DuraTrax/O'Donnell 20%-nitro Ready-2-Run Fuel

This fuel is specially formulated to meet the demands of the sport engines that are included with RTR cars and trucks. According to O'Donnell, the fuel is blended with hydra-stabilized lubricants to provide maximum engine protection. The HPI Nitro Star 21BB engine ran well, and the constant plume of smoke emitted by the exhaust stinger signaled that the engine was receiving plenty of lubrication.





OFNA Ultra LX Pro

I REMEMBER MY FIRST TIME AS IF IT WAS YESTERDAY. Don't get me wrong—I waited a long time before I did it. Back when I was 16, not a lot of kids were doing it. They just didn't know how. But I did some reading about it, and yes, I even watched a few people do it before I attempted to do it myself. I was a little nervous at first ... but I just took a deep breath, stuck the glow igniter on, pulled the cord, and the engine fired right up. (If any of you thought I was talking about anything other than nitro cars, you're sick.)

The big-block buggies of the past were intimidating machines, but the OFNA guys took it upon themselves to make it easy and exciting to get into with a broad line of RTR buggies. The Ultra LX Pro is the latest, and it arrives assembled; only a few easy steps are required to get the buggy from the box to the backyard. OFNA equipped the car with a large-displacement .25 engine to meet your need for speed, a heavy-duty, long-travel suspension for sick-air jumping, and knobby-treaded tires to tear up grass and roost dirt. It has even thrown in most of the accessories that typically have to be purchased separately with other vehicles in this class. But enough of that; let's see whether this buggy is right for *your* first time.



BACKYARD BRAWLER

THE LX PRO IS BUILT ON A 3mm ALUMINUM CHASSIS THAT'S COATED WITH AN ATTRACTIVE, GRAY-ANODIZED FINISH.

OFNA installed a long, dual-chamber tuned pipe on the big-block .25 engine to increase both torque and top-end performance.

DATA CENTER

VEHICLE TYPE 4WD RTR off-road buggy

BEST BUYER First-time buggy owners and those looking for an out-of-the-box, off-road-buggy experience

KIT RATINGS (poor, satisfactory, good, very good, excellent)
Instructions Very good
Parts fit/finish Very good
Durability Very good
Overall performance Very good

SPECIFICATIONS

MANUFACTURER OFNA

MODEL Ultra LX Pro

SCALE 1/8

PRICE \$320

Varies with dealer

DIMENSIONS

Wheelbase 12.7 in. (322mm)

Width 11.9 in. (302mm)

WEIGHT

Total, as tested 130 oz. (3,686g)

CHASSIS

Type Plate with plastic and aluminum bracing

Material 3mm-aluminum main chassis and 2mm-thick radio tray and braces

DRIVE TRAIN

Type Full-time, shaft-driven 4WD

Transmission 14T clutch bell/50T steel spur gear

Drive shafts (F/R) Universal-joint/dogbone

Differentials 6-gear with steel ring gears and O-ring-sealed plastic housings

Bearing type Rubber-sealed ball bearings

SUSPENSION

Type (F/R) Upper and lower wishbone/lower H-arm with turnbuckle upper link

WHEELS

Type One-piece, split-spoke

TIRES

Type Lug, off-road tread with foam inserts

ENGINE AND ACCESSORIES

Engine Force .25 round-port, rear-exhaust with pull-starter

Carburetor Aluminum-body, 2-needle slide

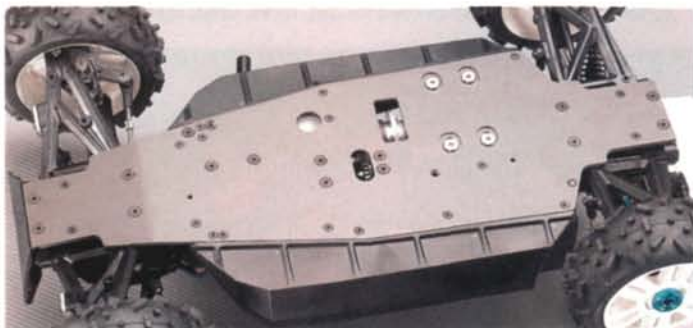
Exhaust Spring-mounted tubular aluminum manifold and dual-chamber pipe

Fuel tank 125cc

Above left: remove a few screws and E-clips, and you have instant access to the diffs. With the back cover removed, you can see that OFNA coated the diffs with an ample supply of grease to help reduce friction and wear. Above right: OFNA selected a cast, pivoting steering-knuckle suspension for the Ultra LX Pro; this cuts down on the number of moving parts.

KIT FEATURES

CHASSIS. The LX Pro is built on a 3mm aluminum chassis that's coated with an attractive, gray-anodized finish. Plastic guards are bolted to the chassis, and they curve high up inside the body to keep out dirt, stones and other debris. An enclosed electronics box protects the receiver and battery holder; water and dirt will have a hard time finding a way inside. OFNA went the extra step to include a silicone cover for the on/off switch



Above: the lower chassis plate is perfectly smooth; OFNA even uses flat-head engine screws recessed in milled slots to prevent them from hanging below the chassis and possibly scraping the ground. **Right:** check out the size of that heat-sink head; it's perfect for cooling a powerful engine. On the pull-start, you'll notice that the cord is wrapped around a metal sleeve in the handle; this prevents the cord from being pulled out of the handle.

to protect it from the elements. Rounding out the platform are a 2mm-thick, blue-anodized aluminum radio tray, a steering-bellcrank brace and a rear-chassis brace. To prevent the front end from collapsing in an impact, a plastic "flying buttress" stiffener reaches up from the main chassis and is attached to the bellcrank brace.

DRIVE TRAIN. Like all other OFNA 1/8-scale buggies, the LX Pro is equipped with a 3-differential shaft-drive system. In the center diff, the LX boasts a solid-steel spur gear, and the steel ring gears on the front and rear diffs each contain four spider gears. The diffs are built with O-ring seals and are factory lubed with grease; since they are sealed, this allows you the option to fill the diffs with silicone fluid as a traction-tuning aid. Steel dogbones link the three diffs and reach out to the rear wheels, but the front end gets a pair of universal-joint axles that prevent chatter while steering. All four corners have 6mm stub axles and 17mm hex hubs, so just about every available aftermarket rim will fit. Rubber-sealed bearings are used throughout the drive train to keep out dirt to extend the time between routine maintenance sessions.

Front and rear disc brakes with 3.5mm fiber rotors and steel calipers do the stopping, and factory-installed thumbwheel-linkage adjustment knobs make it easy to fine-tune the front and rear brake bias.

SUSPENSION AND STEERING. The LX Pro is outfitted with long-travel upper and lower wishbone arms in the front and a lower H-arm with an upper link in the rear. The rear is fitted with a 2mm swaybar to improve stability, but the front end is fully independent. Up front, the wishbone arms hold the Pro's cast steering knuckles, and steel turnbuckle linkages allow toe adjustments without disassembly. To adjust the camber settings, you will have to remove the top kingpin because the upper arms use threaded rods instead of turnbuckles.

The large-bore shocks are as good as they get. Instead of using clip-on collars that could pop off, the aluminum shock bodies are threaded, so spring preload is adjusted easily. Silicone boots protect the shock shafts from harmful, component-destroying dirt. A heavy-duty servo-saver is integrated into the buggy's dual-bellcrank steering system, which combines thick plastic 'cranks with a blue-anodized aluminum drag bar.

ENGINE AND ACCESSORIES. Want a big engine? Would a .25 be big enough? The LX Pro's Force mill displaces .25ci (instead of the usual .21), and it delivers more low-end torque. An extra-large, heat-sink head mates



with the large, 5-port chrome sleeve. Inside the engine, you'll find a wide-face piston; a machined connecting rod with bushed big end; a dual ball-bearing-supported crankshaft with a ported counterweight that helps the fuel/air mixture pump through the engine more efficiently; and an aluminum-body, 2-needle slide carburetor.

OFNA equipped this powerplant with impressive components. The single-chamber, less efficient tuned pipes have been canned for a more expensive power-improving dual-chamber tuned pipe; its spring-mounted exhaust manifold will flex on impact instead of coming apart as zip-tied couplers can. Clean air enters the Force .25 engine through a foam-element air filter, and its

ELECTRONICS & ACCESSORIES

INCLUDED



AIRTRONICS BLAZER RADIO SYSTEM. The Ultra LX Pro comes with an Airtronics Blazer AM radio system installed in the vehicle. The radio unit features fine-trim knobs for the throttle, steering and reversing as well as servo-reversing switches. Three LEDs display the status of the transmitter batteries: green is "good"; red is "replace." The grip and wheel are comfortable for children and adults to use; it's a great sport-model radio.

AIRTRONICS 94012 SERVOS. Taking care of the throttle and steering are 94102 servos that put out 50 oz.-in. of moving power. An Airtronics 92721 receiver pulls in the radio signals and has a 4-AA battery holder.

OFNA GLO-STARTER. OFNA includes a red, plastic-body, clamp-style glow starter. All you'll have to do is drop in a fresh alkaline battery, and then you'll be ready to fire up the plug.

OFNA FILL SPOUT. Also included is a "make-your-own-fuel-bottle" spout. Just screw the aluminum filler spout onto an empty soda bottle and—voilà—instant fuel bottle. Be sure to clean out the bottle, remove the soda label and mark in big letters on the bottle: "FUEL! Don't drink me!" before you start fuelin' around.

YOU'LL NEED

- 12 AA batteries
- Battery for glow igniter
- Fuel

FACTORY OPTIONS

- Aluminum
- Arm holders item no.—31171
- Wing support—31210
- Servo-arm set—31220
- Sealed torque-sensing diff—31320
- 3-shoe CNC machined-aluminum clutch (purple)—10012
- Clutch springs (Pro Gray)—10101
- CVA joints (front or rear)—30071

silicone elbow is secured with a wire standoff. OFNA's racing-style, 125cc fuel tank feeds the system, and an internal stone-type filter prevents crud from entering the carb; a molded-in splashguard keeps fuel away from the brakes.

BODY, WHEELS AND TIRES. Don't check the source guide to find out which pro painter did the artwork on the body. The LX Pro comes with the factory-finished body you see on these pages, and we're sure you'll agree that

OFNA is busting out some of the best looks in RC. OFNA also hacks the body for you. The openings for fuel-tank access and engine clearance have been cut out, but we had to do a little trimming so the body would clear the rear shocks properly.

The LX Pro's rubber tires are factory-glued to attractive split-spoke wheels; the widely spaced knob pattern helps them grip just about any surface, with all the grab needed for dirt, rocks, sand, roots and ruts.

PERFORMANCE

Decisions, decisions: where should I churn up the dirt? Should I wreck the freshly groomed baseball field in front of our offices or make tracks in the freshly cut grass of the local park? I chose the field for a quick engine break-in session. The Force .25 fired right up with its first taste of Sidewinder 20-percent nitro fuel and burbled through five tanks before I really got on it. After the break-in, the engine dumped a lot of low-end torque into the Ultra LX Pro as it easily lit up all four wheels in the dirt. The buggy's top speed is an impressive 46mph; with the optional larger gear, it could go faster, but you'll lose the power that makes it tear up the rough.

After a few tanks on the flat field, I decided it was time to see what the LX Pro could do in the type of environment it had been designed for: the ruts, bumps and jumps of the local BMX track. The buggy is set up for maximum ground clearance and suspension travel; the stiff damping shock fluid and spring combo gave me a license for big-air jumping and abusive, rough-terrain runs. Launching off huge dirt jumps didn't faze the LX Pro; with a hard attack at the jump and letting off right as the buggy touched the face, it took to the air stable and flat. It landed with a slight slap as the chassis smacked the dirt; the suspension absorbed most of the impact, so the buggy wasn't thrown off track. On the small "stutter" bumps, the stiff suspension couldn't react as quickly, but since this buggy isn't set up to be a race vehicle, its capabilities in this department are perfectly acceptable.

LIKES

- Powerful and reliable .25 engine.
- Strong chassis and suspension can take a beating.
- Great-looking, factory-finished body.

of getting the fun-oriented buggy turned around. If you want the LX to carve high-speed turns like a race buggy, you'll need to upgrade to a more powerful servo; one with 100 oz.-in. of torque would be best.

The LX Pro comes with an Airtronics 94102 for a throttle/brake servo as well, and it has just enough power to slow the vehicle but not enough to lock the brakes. There was just enough braking to allow safe stops when the brake was fresh, but as the brake parts were broken in, a quick adjustment to the linkage was necessary to bring the braking back up to par.

THE VERDICT

OFNA has designed the Ultra LX Pro buggy so it can handle just about any type of off-road terrain and still be tough, reliable and powerful. It shines in the hard, backyard-type environments and has racetrack potential with a few upgrades and some tweaking. The Force .25 powers it through grass, sent it sailing off big jumps and roasted dirt. Because the Ultra LX Pro is assembled by OFNA and is almost ready to go right out of the box (with the included glow igniter and fuel bottle, too), this is truly a great car for first-time buggy drivers.

DISLIKES

- Body requires a little extra trimming for a proper fit.

THE ENGINE DUMPED A LOT OF LOW-END TORQUE INTO THE ULTRA LX PRO AS IT EASILY LIT UP ALL FOUR WHEELS IN THE DIRT.

Sidewinder Backyard Basher 20-percent nitro

According to Sidewinder, the Backyard Basher fuel blend is 18-percent lubricant for longer engine life and easier tuning. The fuel contains CleanCastor extra-virgin castor oil and CP-07 friction modifier, MTEC combustion enhancer and 99.97-percent-pure methanol. Jeremy Kortz recently won the Off-Road Fuel Nats with Sidewinder's race-blend fuel, so it's definitely good stuff.



SOURCE GUIDE

AIRTRONICS (714) 978-1895; airtronics.net

OFNA RACING (949) 586-2910; ofna.com

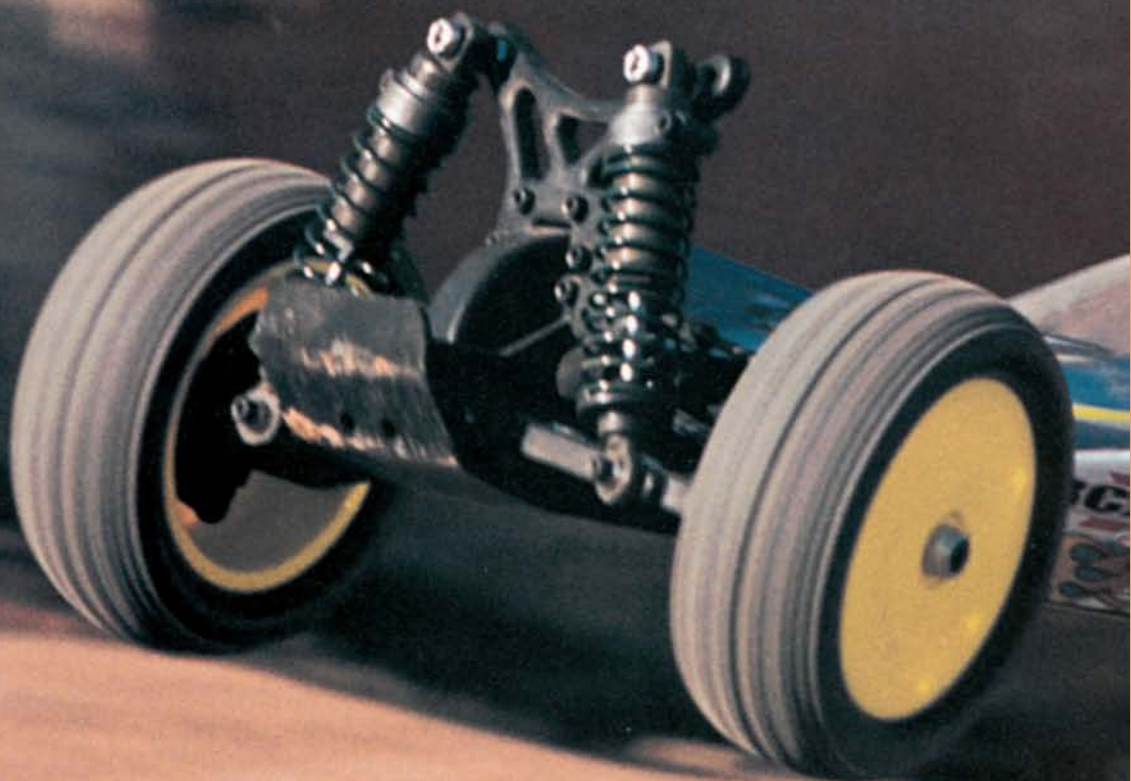
SIDEWINDER FUELS distributed by Morgan Fuel (800) 633-7556; morganfuel.com

THE COMPETITION

	CHASSIS	BALL BEARINGS	DRIVE AXLES (F/R)	SPUR GEAR	ENGINE	RADIO SYSTEM	PAINTED	PRICE*	REVIEWED
Duratrax Axis RTR	3mm	Metal-shielded	Universal/dogbone	Plastic	TORQ .21	Hitec Lynx	Yes	\$499	3/00
GS Racing Storm RTR	3mm	Metal-shielded	Universal/dogbone	Steel	GS .21	JR Racing XR3	Yes	\$560	11/01
Hot Bodies Lightning RR	3mm	Metal-shielded	Universal/dogbone	Steel	Hot Bodies .21	Hot Bodies	Yes	\$420	9/02
OFNA Ultra LX Pro	3mm	Rubber-sealed	Universal/dogbone	Steel	Force .25	Airtronics Blazer Sport	Yes	\$320	3/03
XTM X-Terminator	3mm	Metal-shielded	Universal/dogbone	Steel	XTM .247	Hitec Lynx Sport	Yes	\$499	1/03

*Price varies with dealer.

Team Losi Triple-X4

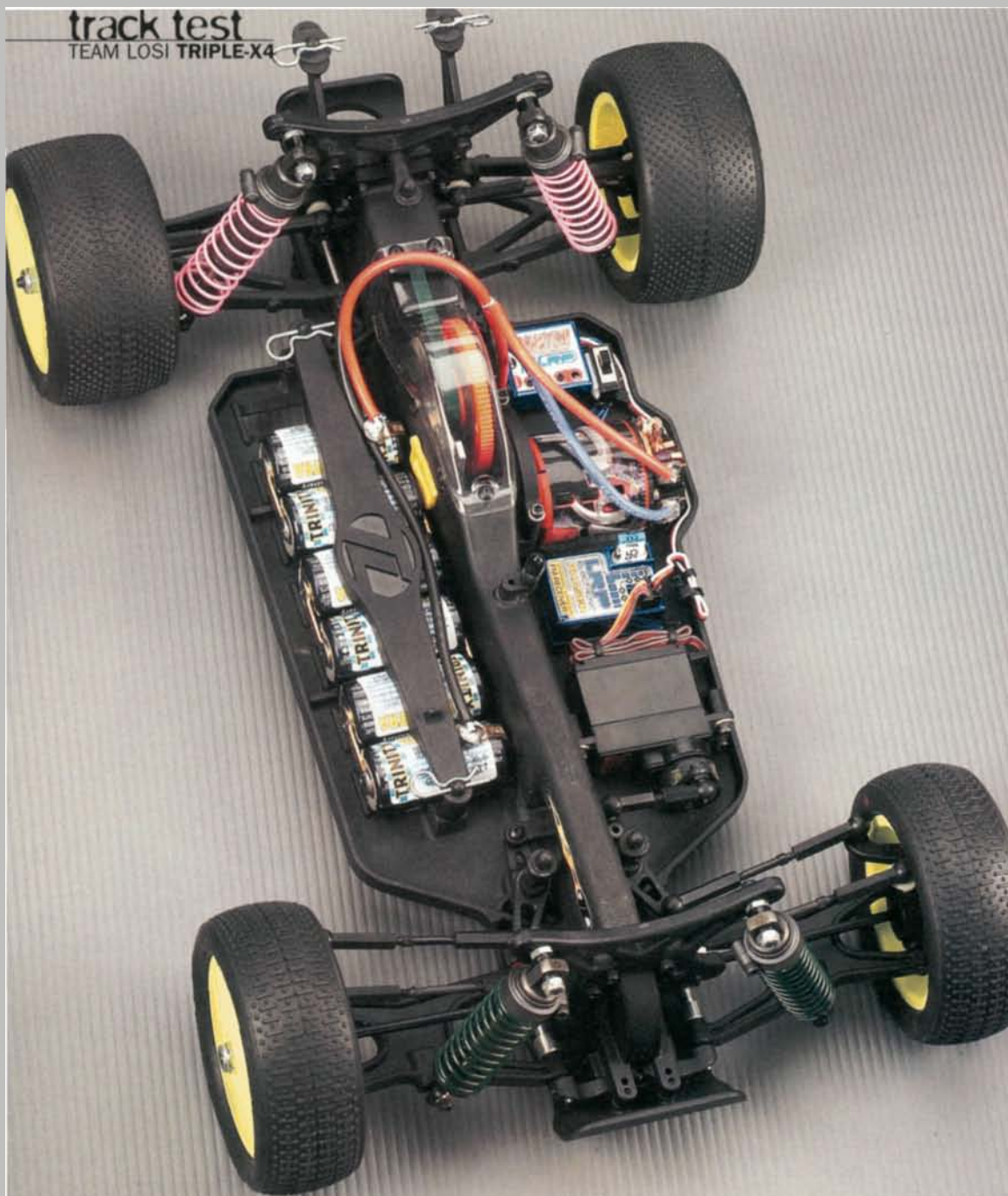


SOME MAY SUBSCRIBE TO THE PHILOSOPHY, "IF IT AIN'T BROKE, DON'T FIX IT," but fortunately for us, Team Losi isn't among them; its guys are constantly looking for ways to improve Losi's cars. The new Triple-X4 4WD buggy is proof; its predecessor, the Double-X4, has won two IFMAR World Championships and is the dominant force in the 4WD class at all levels of competition.

So why tool up for another four-wheeler? Probably because the thought of transplanting the easy-to-work-on chassis and slick single-belt-drive system of Losi's Triple-XS touring car to an off-road buggy was too good to pass up. In the Triple-X4, these components have been reconfigured for dirt, with proven success at the track; Matt Francis TQ'd the 4WD class at the 2002 IFMAR Off-Road World Championship with a prototype Triple-X4. Now it's time to see how the production car performs in the hands of Joe Racer.



THE WORLD'S FASTEST 4X4



THE BUGGY'S CHASSIS RESEMBLES THAT OF THE TRIPLE-XS, BUT IT'S ABOUT AN INCH LONGER TO BETTER SUIT THE TRIPLE-X4'S OFF-ROAD MISSION.



MIP CVD drive axles are standard equipment, as are Losi's time-tested, bottom-filled aluminum shocks. The shock towers key tightly to the chassis' integrated bulkheads, making the Triple-X4 an exceptionally solid off-road platform.

DATA CENTER

VEHICLE TYPE 4WD single-belt off-road buggy

BEST BUYER Off-road racing enthusiast

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Very good

Parts fit and finish Very good

Durability Very good

Overall performance Very good

SPECIFICATIONS

MODEL Triple-X4

MANUFACTURER Team Losi

DISTRIBUTED BY Horizon Hobby

SCALE 1/10

PRICE \$249.99 (varies with dealer)

DIMENSIONS

Wheelbase 11.2 in. (284mm)

Width 9.2 in. (233mm)

WEIGHT

Total, as tested 59 oz. (1,673g)

CHASSIS

Type Molded semi-tub

Material Plastic composite

DRIVE TRAIN

Type Enclosed single belt

Primary 18-tooth pinion/92-tooth spur gear (pinion is not included)

Transmission ratio 2.10:1

Final drive ratio 10.71:1

Drive shafts MIP CVDs

Differentials (F/R) Sealed ball diff with plastic outdrives/steel outdrives

Bearing type Teflon-shielded ball bearings

SUSPENSION

Type (F/R) Lower A-arms with adjustable threaded camber and toe turnbuckles

Shocks Hard-anodized aluminum bodies with steel shafts

WHEELS

Type Yellow dish

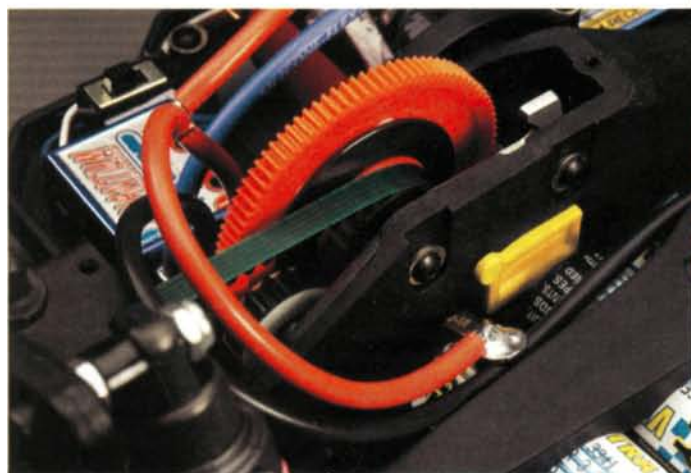
TIRES

Type Losi Red Taper Pins

KIT FEATURES

CHASSIS. The Triple-X4 chassis is made of the same rugged Stiffezell plastic-composite material as is used in all other Losi kits. You'll notice that as in the Triple-XS, a long channel runs through the middle of the Triple-X4's chassis, thereby sealing the serpentine-style single belt. The channel protects the belt and drive-train gears from damaging debris, stiffens the chassis and virtually eliminates twisting flex. Seven battery slots have been cut into the chassis to hold the cells flush with the chassis' underside; the extra slot allows you to move the battery forward for more steering or rearward to keep the back end planted. Losi's Triple-X standard interlocking construction of chassis, shock towers and bumpers was also incorporated into the new four-wheeler's design. The buggy's chassis resembles that of the Triple-XS, but it's about an inch longer to better suit the Triple-X4's off-road mission.

DRIVE TRAIN. The Triple-X4's mono-belt drive train turns front and rear ball differentials that are identical except for their outdrives; the front



outdrives are plastic, and the rear's are steel. Simply remove six screws to easily access either diff. The drive train's belt is reinforced for strength, so it can withstand constant bumps and jump landings. Incorporated into the 92-tooth spur gear is a unique adjustable slipper clutch. To save space in the slim channel, slipper "pucks" are contained in circular cutouts in the spur gear. The pucks are made from the same fiber material as is used for other Losi slipper pads. Two slipper plates on both sides of the gear apply the slipping action to the drive train. A slim hex nut adjusts the action by using the tension from a wave spring. The nut is easily adjusted with a kit-provided wrench. Since this kit is totally race-ready, precision ball bearings are used throughout the drive train to greatly reduce friction and provide the Triple-X4's silky-smooth feel. All four outdrives spin MIP CVD drive axles.

SUSPENSION AND STEERING. The Triple-X4 has a standard lower A-arm suspension with adjustable upper links in the front and rear. The kit-provided tie rods are adjustable on the fly for quick changes. The arms move freely without any hand-fitting—a tribute to the moving pieces' high-quality molding. The bottom-filled shocks are capped with dual O-ring cartridges, so oil loss is minimal and damping is consistent. The preload is adjusted with clamping collars that slide on the hard-anodized shock bodies. For additional tuning, there are two shock-mounting holes on each arm and three mounting locations for the tops of each shock. The steering bellcranks are



Above: the chassis is slotted for 7 cells, and this allows you to move the pack fore and aft. You can also flip the battery brace and install a stick pack for practice or play. **Left:** it's difficult to believe a slipper clutch fits in there, but it does! Note the yellow rubber plug; it seals the gear-mesh-sighting hole. **Below:** Losi supplies Red compound Taper Pin tires with the Triple-X4—a good choice for hard, "blue-groove" tracks.



the same as those used in the Triple-XS. The bellcrank system rotates on aluminum steering posts with plastic bushings.

BODY, WHEELS AND TIRES. The kit includes a wide and extremely trick-looking "Invader" body, the front portion of which has six 3/8-inch cooling holes that can be opened to help keep the electronics a few degrees cooler. The wheels are Losi standard

yellow dish-type mounted with "Red" compound Taper Pins, and the tires include medium foam inserts.

BUILDING & SETUP TIPS

Building the Triple-X4 was easy, thanks to molded components that fit perfectly, well-organized parts bags that contain the parts and fasteners that are needed to complete each step and the excellent instructions with 3D drawings and full-size parts-identification legends. The instructions do an excellent job, but here are some tips to help you along the way.

STEP B-7. Make sure that the tensioner arm slides all the way down on the tensioner bushing before you rotate the entire unit. If the arm does not slide easily into place, you may need to loosen the bushing screw. If the arm is not properly seated, it will come loose, and you will notice that the belt cannot be tightened properly.

STEP D-1. Prethread the pivot blocks with the kit-provided stainless-steel cap-head screw. This will reduce the chances of stripping the 4-40x3/8-inch flat-head screws.

STEPS D-5 & E-6. When you build the front and rear CVDs, avoid getting any red lube in the axle's threads. The lube will work against the bonding agents of the thread-locking compound, and this could cause the entire CVD to come apart.

4-40 SCREWS. The Triple-X4 uses 4-40 screws of various sizes. Make sure that you use the proper screws for each step. If you're unsure, compare the screw with the full-size parts drawings provided in the instructions.

YOU'LL NEED

- Radio system
- Steering servo
- ESC
- 6-cell battery pack
- Motor
- Charger
- Polycarbonate-compatible paint
- Tire glue

FACTORY OPTIONS

- Tire-gluing kit—item no. A-7884
- Front stud tires—A-7283
- Rear IFMAR stud tires—A-7364
- Graphite diff covers—A-9899

PERFORMANCE



I tested the Triple-X4 on a hard-packed off-road course, which was well suited to the buggy's Taper Pin rubber. After a slow lap to check the trims and slipper setting, I buried the trigger to see what the Trinity P-94 could unload on the track. The Triple-X4 leaned back and dug in with a chirp from the slipper as it whistled down the straight. The single-belt drive train is as quiet in the buggy

IT'S UNCANNY TO SEE A LITTLE 1/10-SCALE CAR LAUNCH DOWN A TRACK LIKE A BIG-BLOCK NITRO BUGGY, WITH THE ONLY SOUND THAT OF THE TIRES SINGING ON THE DIRT.

LIKES

- Easy to work on.
- Excellent acceleration.
- Rigid chassis.
- Race-ready right out of the box.

as it is in the Triple-XS; it's uncanny to see a little 1/10-scale car launch down a track like a big-block nitro buggy, with the only sound that of the tires singing on the dirt. The Red compound Taper Pins' low profile provided excellent traction on the hard-packed track surface, so I cinched down the slipper clutch tightly. I also wanted the power to hit low and early, and the tight setting was the fast setup. Now the Triple-X4 practically wheeled off the line and had superior squirt for shooting over double and triple jumps. You won't need a long runway to launch this frequent flyer. The Triple-X4's friction-defying drive train also helped it snap out of corners like a bungee-jumper, and it felt like the fastest cornering off-road car I have ever driven. The suspension was a little soft for the track, however; it allowed the chassis to bottom out more easily than I liked. The stock setup is a good starting point for all conditions but might be a little soft for rough tracks and large jumps. I pitted for a switch to thicker shock oil in the front and rear shocks. After I increased the damping, it was less prone to bottoming out, but as might be expected, the X4 lost a little steering, and the rear end was not quite as planted. It was still drivable and very fast; I'll fine-tune it later. It's nice that the small changes make a small difference in handling; tuning a car that is hyper-sensitive to setup changes is no fun.

THE VERDICT

The Triple-X4's efficient drive train and ease of maintenance make it more than a match for the Double-X4 that preceded it. The car jumps well and is very durable, and it's much more convenient to wrench on than the Double-X4 yet gives nothing away in track ability. It actually corners and accelerates better than the car it replaces, which was still "good enough" to win the most recent IFMAR 4WD world championship. It's difficult to top something that's "better than the best"!

DISLIKES

- Stock suspension settings are a little soft for large jumps.

JR Racing XR3i radio set

JR's latest FM system seems to shout "Buck Rogers," but the futuristic look offsets a very comfortable design; the wheel, trigger and grip are perfectly placed and have a good "feel." The XR3i is also very well equipped and includes all the most used racing adjustments (such as model memory, steering and throttle endpoints and dual rates) as well as more esoteric functions (such as adjustable frame rate and wheel tension, programmable mixing and exponential). It even includes a raceable servo: JR's 80 oz.-in. Z590 to be exact, along with a Z270 "standard" servo.



Additional items used to complete the Triple-X4

JR Racing Z4750 steering servo

GM Racing GMVIS matched Panasonic 3000 pack

LRP Quantum Competition ESC

Trinity P94 Matt Francis 11-double motor

SOURCE GUIDE

GM RACING distributed by Horizon Hobby.
HORIZON HOBBY INC. (800) 338-4639; horizonhobby.com.
JR RACING distributed by Horizon Hobby.
LRP distributed by Team Associated (714) 850-9342; teamassociated.com.
TEAM LOSI distributed by Horizon Hobby Inc.
TRINITY PRODUCTS INC. (732) 635-1600; teamtrinity.com.

TRUCK TRUCKS

HPI RS4 MT ■ TAMIYA TA04-R ■ TRAXXAS STAMPEDE



A nothing draws attention like a trick truck. Whether it's a C-notched street slammer, a high-riding monster, or an off-road prepped Baja blaster, everyone seems to have a soft spot for a hardcore, custom flatbed. That goes for RC, too; no other category is more red-hot right now than the truck scene. I decided to work out my

by Peter Vieira

project-vehicle jones with three trucks that cover the street, high-performance off-road and monster-truck-style spectrums. I also decided to go with electric trucks; nitro hasn't taken over RC completely, y'know! Battery power is clean, quiet and convenient, and that's a perfect combination for these trucks' pure-fun purpose.



3 EXOTIC ELECTRICS



HPI RS4 MT

PROJECT FEAR BY FOUR

You haven't forgotten about this little gem of a truck, have you? HPI's first foray into off-road 4WD trucking is nearly five years old, but it's still pretty trick—or in this case, really trick, thanks to a bunch of hop-up parts that add the popular purple look. Still, this is a truck with a mission, and since that mission is hardcore, high-performance play, I went for extra durability along with the purpleness. Aluminum steering knuckles and uprights, titanium turnbuckles, MIP CVDs and ball bearings all around (plus other upgrades) make this MT just about backyard-proof. One item I did change purely for style was the body; I started with the Baja Bug version of the MT, but it didn't fit the truck theme. The Beetle shell was shelved in favor of a Trinity Reference Pro Nitro body. It's meant to fit the Associated RC10GT, but thanks to the RS4 MT's similar rear-shock-tower placement, GT bodies fit it well.



1. MIP CVDs, Megatech hub carriers, HPI titanium turnbuckles, steering hubs and graphite upper deck. This thing is loaded.

2. Low and wide—as a high-performance truck should be. Note the extra mounting holes for the graphite shock tower; they allow you to quickly lower the truck for street action.

3. A GM V12 ESC pumps the amps through the RS4 MT. It's tiny; note the size of the switch for comparison.



THE STUFF*

BASE KIT

HPI

RS4 MT Baja Bug; \$170

ELECTRONICS

Deans

Ultra Plug zero-loss connector—item no. 1300; \$3

Futaba

Magnum 3PDF radio system—3PDF; \$180

GM Racing

V12 racing ESC—GMM2842; \$159.99

Hitec

HS925MG steering servo—32925J; \$80

Team Orion

Core Modified 15-double motor—23199; \$60

Rocket Pack Sanyo 2400—10200; \$65

DRIVE TRAIN

HPI

Heat-sink motor plate—A289; \$34

Ball-bearing set—B043; \$50

Robinson Racing Products

18T aluminum pinion—1318; \$5

MIP

CVD shiny drive axles (F/R)—80814/80815; \$35/pair

CHASSIS

HPI

Molded carbon chassis—A465; \$39

Graphite upper brace—A700; \$19

Aluminum rear bulkheads—72018; \$40

OFNA

Purple-anodized hardware (boxed set)—10951; \$60

SUSPENSION

HPI

Super Shocks (F/R)—A723/A725; \$36 each

Titanium turnbuckle set—72094; \$39

Graphite rear shock tower—A705; \$15

Aluminum steering arms—72065; \$32

Stainless-steel hinge pins—A212; \$18

Megatech

Front aluminum C-hubs with bearings—MTC2274; \$40

Rear aluminum hub carriers—MTC22018; \$25

BODY, WHEELS AND TIRES

Pro-Line

Gladiator M3 tires—8170-02; \$20/pair

RPM

Slingshot chrome 2.2-in. wheels—81891; \$8/pair

Trinity

Reference Pro Racing RC10GT truck body—REF1202; \$21

TOTAL COST

\$1,352.99

*See page 247 for the complete Source Guide

2



3



WHEELIN' IT

The HPI RS4 MT is a well-sorted truck in stock form, thanks to its sure-footed, long-travel suspension and full-time 4WD. My upgrades really didn't change the truck's character; they just prettied it up and made it even more durable. What does influence its driving characteristics are its electronics, and that's where the Team Orion Core 15-turn modified comes in. I would have preferred more turns, but 15 is the "mildest" wind you can get in a Core mod. Run times were a little short, but the truck was very fast and scaled just about anything short of vertical. Four-wheel-drive and Pro-Line Gladiator tires were just the tickets for the anything-goes environment the Fear by Four was built to handle.

HPI SUPER NITRO RS4 TIRES
AND MESH WHEELS

REEDY R3K BATTERY

FUTABA S9304 SERVO

REEDY TI MODIFIED

LRP QUANTUM PRO
REVERSE ESC

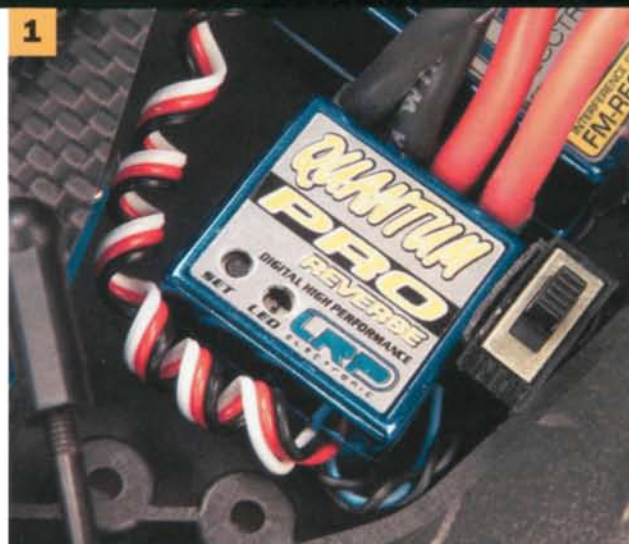
TAMIYA LOW-FRICTION DAMPERS

TAMIYA TA04-R

PROJECT DUBBLE TRUBBLE

Rollin' on twenties—you can't stop that! Ludacris' "Roll Out" may be ancient history by hip-hop standards, but are giant wheels still cool for cruising? Fa'sheezy. (I had to look that one up on the Internet.) The typical touring-car wheel and tire combo already fills a wheel well like an 18-inch hoop (at least) would on a full-size car, but I wanted that silly-big, 22-inch, ultra-dub look, straight-out-of-a-driveway shot-from-MTV's-"Cribs"-look. The solution: a set of HPI Super Nitro RS4 wheels that measure a full 2.2 inches in diameter—quite a step up from the typical 1.9 inch sedan wheel. A Zegers-painted HPI Ford F-150 body completes the look, but this isn't an HPI car; beneath the bodywork, it's all Tamiya. The TA04 chassis has been upgraded to "Type R" status with the addition of a full package of blue-anodized factory options. You might even say it's off the heezy! Or something.

1





1. LRP's Quantum Pro Reverse is unbelievably small, but it can handle "big" motors.

2. Look at these HPI meats! They're almost as tall as the shock towers. And check out the threaded-body TRF dampers; these are the nicest shocks I've ever built.

3. The stock TA04-R has a silver heat-sink motor plate; I had to have blue and an aluminum spur-gear mount to match.



THE STUFF*

BASE KIT

Tamiya
TA04; \$170

ELECTRONICS

Deans

Ultra Plug zero-loss connector—item no. 1300; \$3

Futaba

S9304 steering servo—S9304; \$65

KO Propo

EX-11 Presto transmitter—KOP8002; \$160

LRP

Quantum Pro Reverse ESC—LRP8430; \$160

Phaser 27MHz receiver—LRP8401; \$85

Reedy

Ti Modified 11-double motor—379; \$60

R3K Panasonic 3000 stick pack—632; \$55

DRIVE TRAIN

Kimbrough

Spur gear (120T, 64 pitch)—213; \$3

Robinson Racing Products

Aluminum Pro pinion (40T)—4340; \$5

Tamiya

Machined-aluminum gear mount—49202; \$18

Heat-sink motor plate—49199; \$17

Aluminum universal-joint axles—49201; \$35

Aluminum steering bellcranks—49195; \$28

Aluminum bellcrank posts—49194; \$10

CHASSIS

Tamiya

Aluminum servo mounts—49196; \$10

Molded carbon chassis—53494; \$35

SUSPENSION

Tamiya

TRF shock set—49198; \$55

BODY, WHEELS AND TIRES

HPI

Ford F-150 200mm body—7051; \$20

Super Nitro chrome mesh wheels—3037; \$10/pair

Super Nitro belted tires (33R compound)—4598; \$18/pair

TOTAL COST

\$1,050

*See page 247 for the complete Source Guide

WHEELIN' IT

What a blast! The larger contact patch of the super-size HPI tires gives the TA04-R chassis superior stick for rocket-like launches and loads of cornering grip. There was a bit of a clearance issue with the wheels and body: full-lock steering caused the tires to buzz away some paint. You'd never know that was happening while driving, though; the Reedy Ti 11-turn didn't lose any rpm that I could detect. Although they rubbed the body, the wheels added clearance elsewhere: under the chassis. The truck was able to glide over pebbles and cracks in the pavement that would ordinarily scrape a sedan, and there was no handling weirdness. I know it's a cliché, but Dubble Trubble actually performs as well as it looks!

THUNDER TECH
DIAMONDBACK
ROLL CAGE

PROGRESSIVE
SUSPENSION
EDC-2 SHOCKS

GPM ALUMINUM BUMPER
AND SKIDPLATE

NOVAK
SUPER ROOSTER
ESC

PRO-LINE GIANT TRAC TIRES

TAMIYA JUGGERNAUT 2 WHEELS

TRAXXAS STAMPEDE

PROJECT CAGED CLASSIC

With a name like "Stampede," it's only fitting that Traxxas' long popular, 1/10-scale monster truck has been just about unstoppable since its debut way back in 1995. It's fast, affordable, good-looking and tough, and those are great features, but its real appeal (at least, for this article) comes from the truck's deep aftermarket support. I installed a complete GPM kit for the ever-popular, lots-of-aluminum look, but the Thunder Tech Racing parts and Pro-Line Clod tires transform the truck from just another 'Pede into a truly radical ride (did I just say "radical ride"? Someone must have set the time machine to 1986). Thunder Tech supplies the ultra-trick aluminum and graphite roll cage that almost overshadows the all-graphite chassis. Thunder Tech also makes the Tamiya wheel conversion possible with its clever adapters, and Tamiya's Juggernaut wheels are the perfect finishing touch.

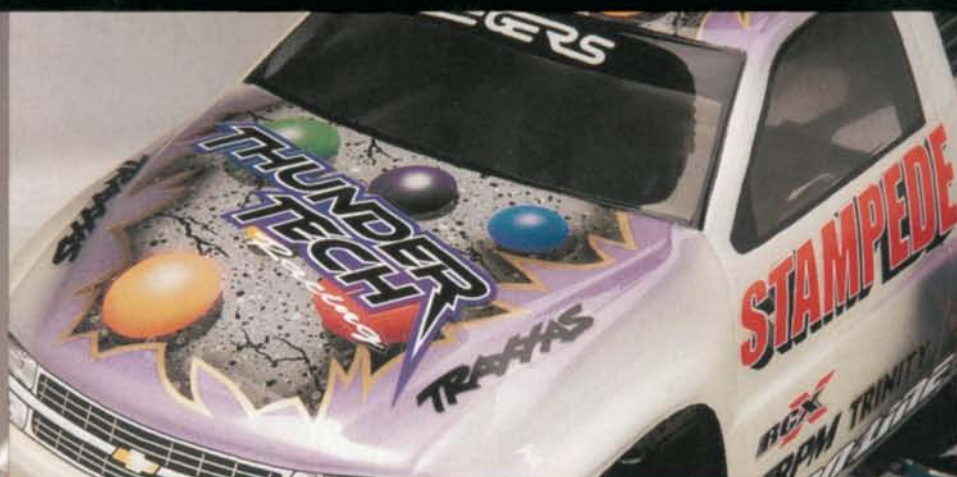
1



1. Progressive Suspension makes some of the trickiest shocks in RC. The damping is externally adjustable, and the external reservoirs are functional. Sweet.

2. Nice Clod Buster. No! It's a Stampede! Thunder Tech adapters make the wheel conversion possible.

3. GPM makes all the blue stuff except the machined-Delrin hub carriers, which are from Thunder Tech. These "Extenda-Blocks" make the Stampede's front and rear axles equally wide, so you don't have to use wheels with different offsets.



THE STUFF*

BASE KIT

Traxxas

Stampede; \$85

ELECTRONICS

Deans

Ultra Plug zero-loss connector—item no. 1300; \$3

JR Racing

Ultra Torque Digital servo—JRPSZ8550; \$115

Novak

XXtra 27MHz receiver—2627; \$100

Super Rooster reversing ESC—1860; \$125

Trinity

Speed Gems Pro Amber motor—4954; \$35

Sanyo RC2400 matched stick pack—VXR2416A; \$80

DRIVE TRAIN

RPM

Blue gear cover—80405; \$6

Traxxas

Steel outdrive yokes—4628X; \$18

CHASSIS

GPM

Front skidplate—TE1003; \$20

Thunder Tech

Diamondback cage kit—DIA-BACK-02; \$145

Outlaw graphite chassis—OUTLAW-01; \$125

SUSPENSION

GPM

Suspension arms (F/R)—TE1055/TE1056; \$35 each

Hub carriers (F/R)—TE1019/TE1022; \$55/\$25

Steering arms—TE1021; \$25

Front shock tower—TN1028; \$25

Progressive Suspension

EDC-2 shocks with reservoirs (4 in.)—

EDC-2001; \$76/pair

EDC-2 shocks with reservoirs (3.5 in.)—

EDC-2003; \$76/pair

Thunder Tech

Extenda-Blocks—DELTX-02; \$40

BODY, WHEELS AND TIRES

Pro-Line

Giant Trac tires—1056-00; \$27/pair

Chevy Silverado T-Maxx body—3100-00; \$25

Pro-Line

Juggernaut 2 wheels—9805607; \$47.99/pair

Thunder Tech

Clod Buster wheel adapters—DELEP01; \$45

TOTAL COST

\$1,468.98

*See page 247 for the complete Source Guide

2

3

WHEELIN' IT

Gear down! The Stampede's transmission wasn't designed to spin monster meats like Pro-Line's Giant Trac tires, so low gearing is critical. So is a high-torque motor; instead of the 11-turn Trinity D3.5 you see peeking out of the tranny in the photos, I ran the Caged Classic with a Trinity Speed Gem Pro Amber 17-turn modified. Instead of the stratospherically high rpm favored by the D3.5, the Amber is built for low-rpm pulling power, and that's what it delivers. The Traxxas truck moved out well with the Trinity powerplant, and it even steered with surprising quickness thanks to the super-high-torque (188 oz.-in.!) JR Z8550 steering servo. The Caged Classic would no doubt accelerate harder and go faster with the 2.2-inch rubber it was designed for, but for ultimate style, the Clod-size sneakers are key. They're staying on there! ■



Above, left to right:
a battle of the
wedges between
"Tinbender" and
"Pig."

"Tsunami" by Team
Sinister.

"Killer" uses an
overhead knife and
a classic wedge to
attack opponents.

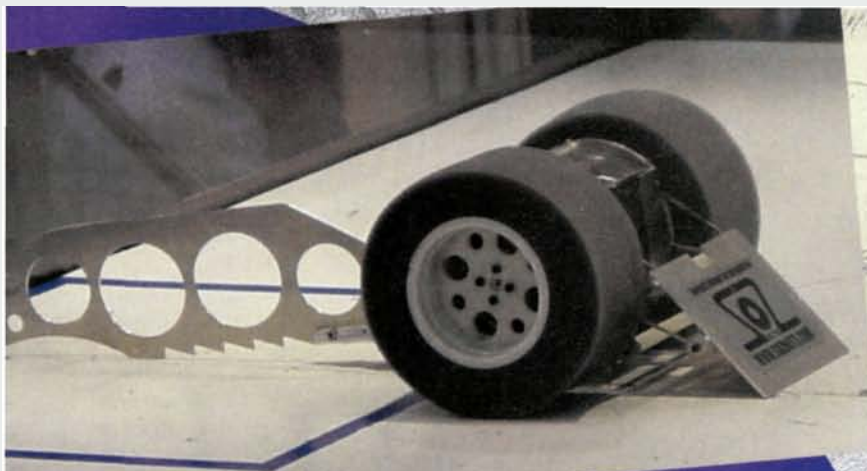
"Cupcake" has a
5,000rpm spinning
drum weapon.

ROBOT

You've seen those gripping, fighting-robot TV shows with the large, heavily armored machines thrashing and bashing until one of the 'bots is immobilized or destroyed, and the winner basks in the glory of victory. The massive combat 'bots most of us think of may weigh hundreds of pounds and cost thousands of dollars to build, but those aren't the only fighting machines in the robot world. The new "Antweight class" Sozbots weigh only 16 ounces or less; that's where the name comes from: "S" as in sixteen and "oz" as in ounces. They are electric powered (pneumatic systems can also be used), cost no more than typical RC vehicles and offer all the combat intrigue and creative design challenges of their larger cousins. They are also made out of standard RC car parts—with a few creative additions, of course.



Peter Abrahamson drives his robot, "Tsunami," to second place at Sozbots 1.3.



RUMBLE

SOZBOTS, the leading Antweight fighting robot organization, holds tournaments in which these mighty miniatures duke it out in battle cages that are five feet square. The cages have walls made of transparent polycarbonate, and there are elaborate procedures to guarantee the safety of 'bot drivers and spectators alike. Sozbots deliver all the fun and excitement of the larger robots you've seen on television at a fraction of the time and cost required to compete with the big boys. In short, this is fighting RC robot action that anyone with car experience can easily get into.

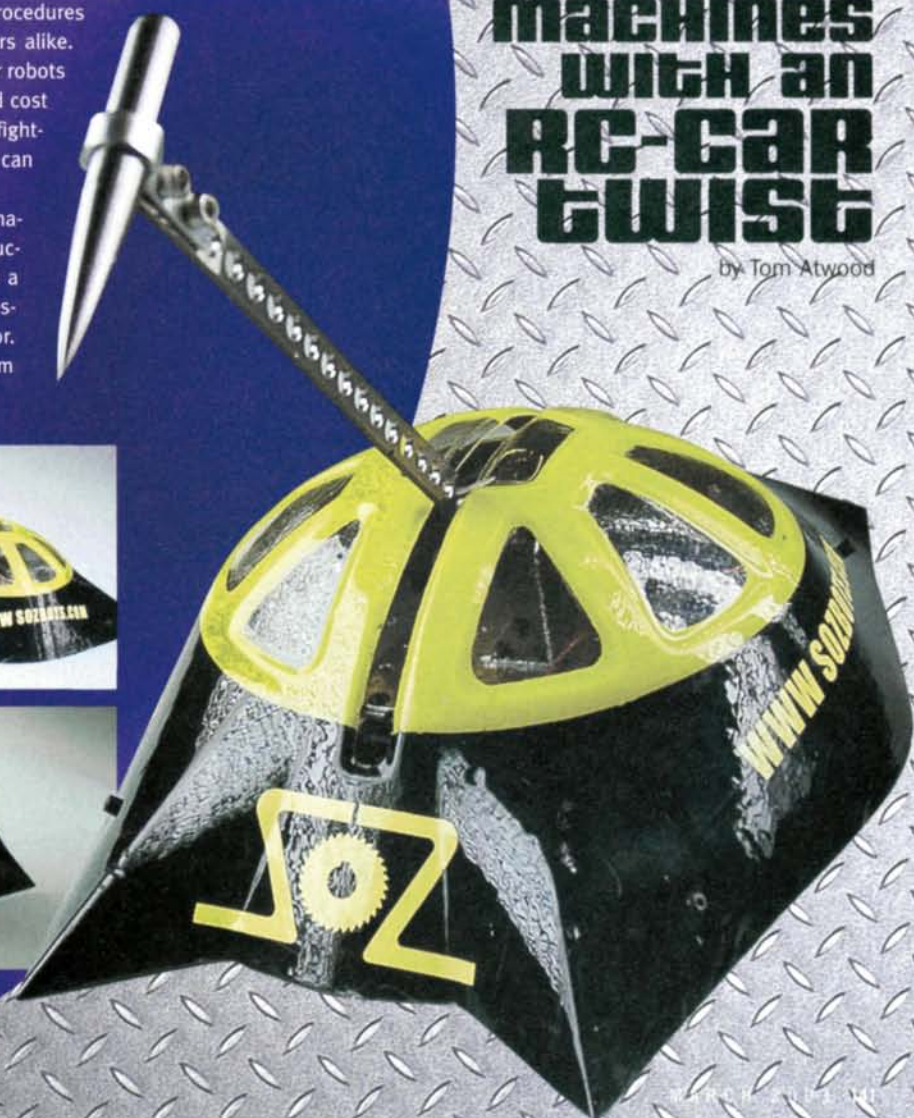
The SOZBOTS website (sozbots.com) includes tournament announcements, robot rankings, tips and instructions, news bulletins, video of Sozbots in action and a shopping section that offers components and accessories to make your very own Antweight gladiator. Interestingly, it's often the case that the weapon system on a Sozbot draws more power than its drive system.

**FIGHTING
MACHINES
WITH AN
RC-CAR
TWIST**

by Tom Atwood



"Micro FrenZy" attacking "LB" with his titanium arm.



ROBOT RUMBLE

If you compete in the Antweight class, you can spend as much time as you wish practicing your driving skills, perfecting strategy and tweaking your robot's design to develop that winner's edge. The attraction lies not just in the thrill of victory; an important rule noted at sozbots.com: "Fun requirement: SOZBOTS is about getting together with friends and having a good time."

BATTLE RULES

The Antweights fight in two types of battles. There are two-minute double-elimination battles in which either a knockout or judges' points decide the victor. If a damaged robot cannot achieve



Cassidy Abrahamson, the youngest and only female competitor at Sozbots with her robot "Falcon."

continuous linear travel of 1 inch in 5 seconds, it is considered immobilized and a goner. There are also 3-minute free-for-all melees in which up to eight 'bots fight, and those "still standing" at the end of the round are declared the winners.

A group of Sozbots will battle it out at the upcoming RC Expo trade show at the Anaheim Convention Center on May 2, 3 and 4, 2003 (visit RCExpo.com for more information on this RC extravaganza). Is there a Sozbot in your future? The technology is here (heck, it's already on your workbench), and the sport is gathering huge momentum. As this new arena of RC power and excitement (and destruction!) expands, we will keep you posted.



Great Planes
C-5 Nano ESC

Tamiya twin-motor
gearbox

HPI micro
motor

Tamiya 56mm
Sport tires

Custom-made
weapon arm

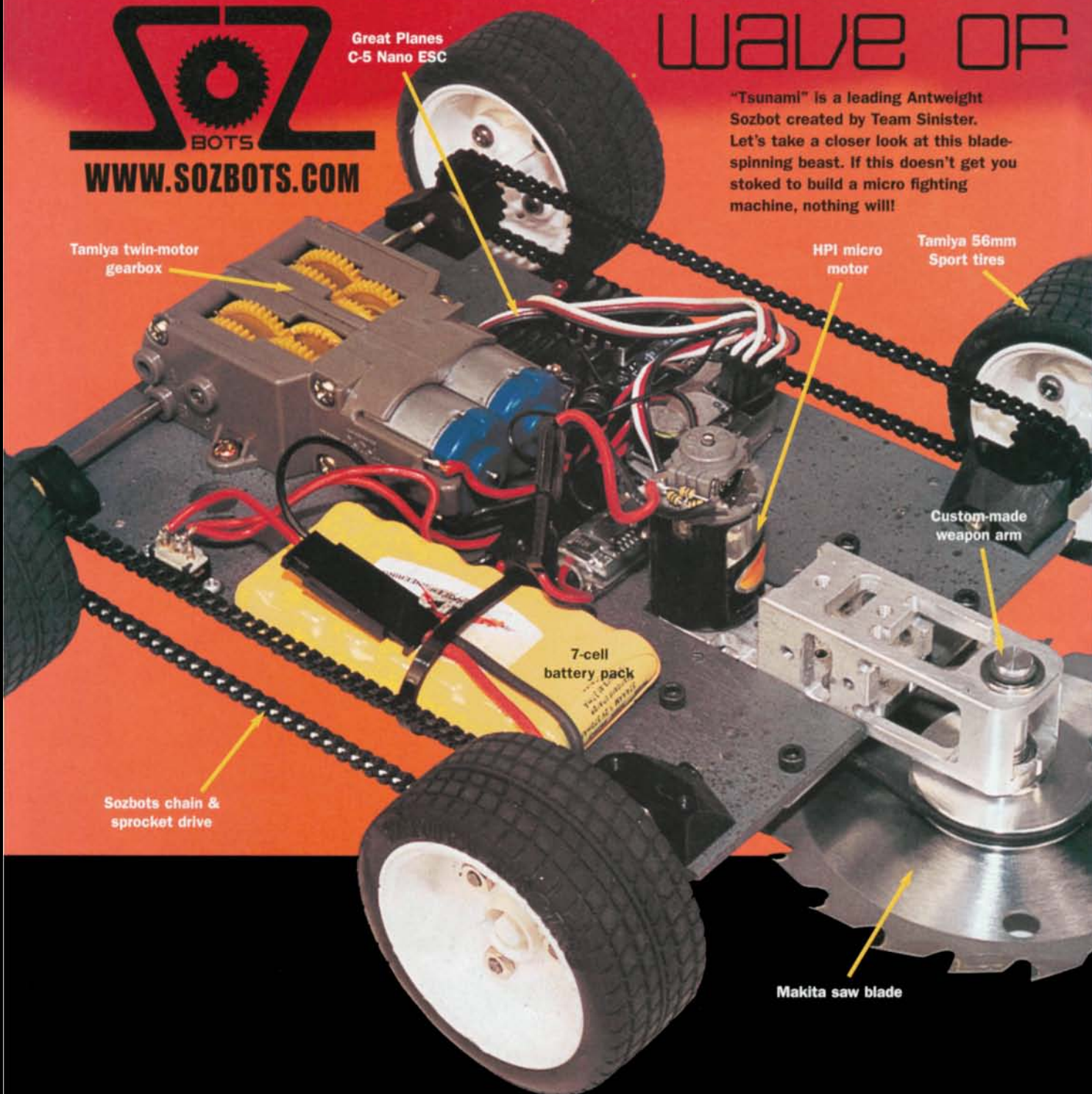
7-cell
battery pack

Sozbots chain &
sprocket drive

Makita saw blade

WAVE OF

"Tsunami" is a leading Antweight Sozbot created by Team Sinister. Let's take a closer look at this blade-spinning beast. If this doesn't get you stoked to build a micro fighting machine, nothing will!



- > Check out the variety of robot combat organizations here: botbash.com.
- > Get the inside scoop on this action-packed RC show event: RCexpo.com.
- > Robot Fighting League info: botleague.com.
- > Everything you need to know about Steel Conflict—including event dates: steelconflict.com.



Steel Conflict robots with attitude

While robotic combat is now accessible to RC enthusiasts on the Antweight scale, the sport that involves the larger bots is growing exponentially nationwide. According to Steve Brown, the founder of Steel Conflict and the builder of three successful, large-scale, combat robots, this new sport is huge and growing every day; the largest gathering of combat-robot builders is in Southern California. "We've got robots made from aluminum, Kevlar, titanium, bulletproof Plexiglas and, of course, good old-fashioned steel. The power packed into the weapons of these machines is incredible. There's nothing like watching pieces of a robot get

torn off and thrown against the safety walls! The world will never be the same," says Steve.

Steel Conflict held a tournament at the FairPlex in Pomona, CA, in August 2002 that was attended by more than 100 of the massive robot heavyweights; many of

them came from throughout the U.S. Steel Conflict's next event will be at the FairPlex on February 8 and 9, 2003, and it will also hold an exhibition tournament at the RC Expo trade show on May 2, 3 and 4, 2003. For a peek at the variety of robot combat organizations out there, check out the Robot Fighting League at botleague.com. ■



DESTRUCTION

Killer Features

Robot: Tsunami
Team: Team Sinister
Weight class: Antweight
Weight: 15.9 oz.
Top speed: 4 ft./sec.

Drive Train

Twin-motor gearbox, 58:1 gear ratio
FA-130 stock motors
3mm hex axles
Micro chain and sprockets broached for 3mm hex
56mm Sports tires

Manufacturer

Tamiya
Tamiya
Tamiya
Sozbots
Tamiya

Custom chassis

3/8-inch-thick model aircraft birch plywood
Delrin axle-bearing blocks
3mm front-axle bearings

Midwest
Custom made
Tamiya

Electronics

Sozbots dual-speed control board (drive)
Micro receiver (27MHz)

Sozbots
Your choice

Battery

8.4V 370mAh NiMH 7-cell pack

Technical Products Engineering

Weapon

Micro-modified motor 45-turn
C-5 Nano high-frequency ESC w/BEC
3 3/8-inch 20-tooth carbide-tipped saw blade
Saw arbor
Weapon arm

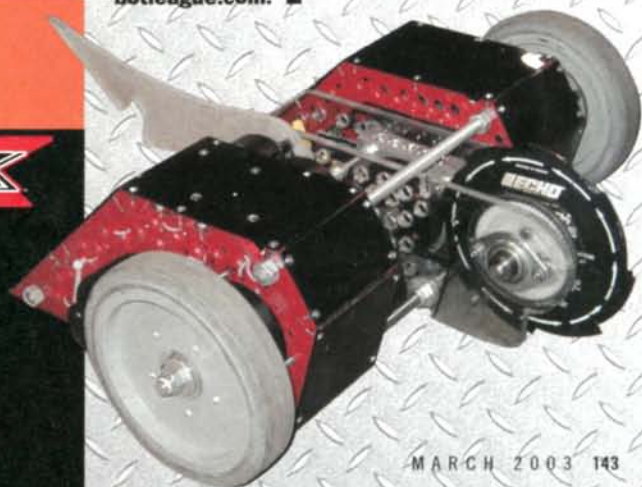
HPI
Great Planes
Makita
Custom-made
Custom-made



See 'em at

RCX

Tsunami and the powerful Futaba 9ZAPS that controls many of Team Sinister's robots.



RACER NEWS

SPONSORED BY

KYOSHO
THE FINEST RADIO CONTROL MODELS

BY GEORGE M. GONZALEZ & JASON SAMS

LRP GEARS UP FOR MASTERS

The sixth annual LRP Touring Car Masters Race will be held on April 4 through 6, 2003, in Eppelheim, Heidelberg, about 50 miles south of Frankfurt, Germany. The race promoters expect 270 drivers, including top pro racers from several countries. Controlled tires, a 12-turn motor limit and EFRA rules will be enforced at the event. If you have the dough and think you can hang with the big boys, more information is available on EFRA's website at efra.se.

SITE SEEING



nabiscoworld.com

Your pals at the snack empire known as Nabisco have cooked up a pretty cool online off-road driving game called "Triscuit 4x4." You're behind the wheel of a monster-truckified SUV, which gets some hefty air on the way to the finish line. Just remember to hit the gas-can powerups so you don't run out of fuel, and don't be surprised if you have an inexplicable desire to buy a box of Triscuits after the race.

BOARD WALK

FROM THE
RADIOCONTROLZONE
.COM BULLETIN BOARD

Do servos wear out?

CALICO JACK: I have two top-end metal-gear servos. Both seem to have lost torque and speed. Is this normal? Is there any maintenance I should do?

PUDDER: Mine break before they wear out. All motors wear out eventually. Contact the manufacturer.

STEVEK: The gears wear over time, and motors can wear, especially cheaper ones. Check the play in the gears, and consider replacing them.

RUSTLERDUDE: If you use a servo-saver, that may be worn out.

Boost bottle?

NEOGE0: I'm making a boost bottle out of a little BB gun CO₂ tank. Is this a good idea? How well do they work?

ASSASSIN: I don't know if a boost bottle does anything, and BE CAREFUL with the tank; there is still pressure in it.

NORML: In my opinion, there is no gain—no increase in power. There isn't any evidence of improved fuel economy.

How to make tires softer

MCRASH: Can tires be made softer?

GUTTERBALL: Use suntan lotion. We do.

K SW31: There's always Simple Green.

ZR2: Look for a product called Citrol at auto-supply stores. It's in an orange can. It's used to clean grease off exposed bearings.

BE HEARD! LOG ON AT
RADIOCONTROLZONE.COM



Hitec HANDOUTS

Hitec has announced the winners of its annual Field and Track Awards. Each year, Hitec invites RC clubs to apply for the award and chooses 10 of them as recipients of \$1,000 for improvements and upgrades to their facilities. The wealth has been spread to boat, car and airplane clubs across the nation; we hope one of them is yours!

AND THE WINNERS ARE ...

Alexandria R/C Flyers, Miltna, MN ■ Coachella Valley R/C Club, Bermuda Dunes, CA ■ Boerne Area Model Society, Boerne, TX ■ Southern Tier Aero Radio Society, Olean, NY ■ Oswego Valley Modelaires Inc., Hannibal, NY ■ Ithaca Radio Control Society, Ithaca, NY ■ PDX Racing, Indianapolis, IN ■ River City R.C. Racers, Boonville, IN ■ The Admirals of Indianapolis, IN ■ Wyoming Modelers Park Association, Riverton, WY



LOSI TRUCKS RAMPANT AT REEDY RACE

Team Losi's Brian Kinwald, Rick Hohwart and Brian Dunbar laid the smack down with a 1-2-3 finish in Factory Gas, while Ryan Cavallieri and Adam Drake scored first and third in Factory Mod (Associated's Mark Pavidis spoiled Losi's shot at a trifecta). In the non-factory classes, everybody ran Losi trucks; Andrew Swanson won the Gas class, and Jeremy Felles won Mod. There was a Stock class, too, and Josh Numan won it with his Matt Francis Edition Triple-XT.

Take THAT, cancer

Racers Against Cancer Enterprises (RACE) has announced that the fourth annual West Coast Race Against Cancer will be the biggest yet. Showtime RC in Bakersfield, CA, is host of the race, which is expected to attract factory drivers and amateurs alike. At the very least, Adam Drake should be there with his Team Losi pals, since Adam is the RACE chairman! If you'd like to attend the April 26 and 27 event, or just want to make a donation, click over to raceagainstcancer.org.

"TQ'ing the B-main just flat out sucks 'cause you know you just missed the A."

—every racer's response to qualifying 11th

SPEED SHOP



K FACTORY Upgrade parts for Associated Nitro TC3

K Factory has set its sights on the Associated Nitro TC3 and pegged the needle on the trick-meter. The low-CG tank is a real standout; we dig the smoked plastic construction, replaceable pressure fittings and that serious-looking cap handle. K Factory's chunky aluminum hub carriers are shown as well, and the Centax clutch is a thing of beauty; it lets you easily adjust the clutch engagement point and hooks up more securely when you gas it. Finned engine mounts are included. If you'd like to see a Nitro TC3 full of K Factory hardware, take a look at the March issue of *RC Nitro*; Kevin Hetmanski decked one out as a "Super Shop" machine. Nitro TC3 aluminum hub carriers (pair)—item no. K1207; \$60. Nitro TC3 Centax clutch—K1215; \$160. Nitro TC3 low-CG fuel tank—K1206; \$50. K Factory; distributed by Trinity Products Inc. (732) 635-1600; teamtrinity.com; kfactoryracing.com.

OPTION TEAM BY FIORONI Outlaw .12 Tuned Pipe

Since it doesn't comply with EFRA/ROAR regulations, this Italian-made dual-chamber pipe is considered an "outlaw," but if your track is loose about rules, feel free to bolt one in for screaming top end! The pressure tap is factory-soldered so you can leave your JB Weld at home, and the pipe is ready for installation in your 1/10-scale touring car or truck. Look for a ROAR- and EFRA-legal version soon.

Polished aluminum tuned pipe—02-MA02; \$39. Option Team by Fioroni; distributed by General Silicones Co. USA (626) 338-3815; generalsilicones.com.



HOT BODIES Upgrade parts for HPI Nitro RS4 3 RTR

HPI's Nitro RS4 3 RTR is ripe for aftermarket attention, and Hot Bodies has the hookup; these are just a few of the many available parts. The heat-sink head is a direct bolt-on that adds extra cooling capacity and bonus style points; plated universal-joint axles keep the front wheels spinning without chatter; and the graphite upper deck trims weight and looks killer. All required hardware is included.

Nitro RS4 3 RTR heat-sink head—61114; \$35. Nitro RS4 3 RTR graphite upper deck—61137; \$50. Nitro RS4 3 RTR universal-joint front axles—61108; \$20. Hot Bodies (909) 296-9340; hotbodiesonline.com.

CRAZY NUT RACING Machined 7075 aluminum parts

Crazy Nut's heat-sink heads begin life as solid billets of 7075 aluminum and then are whittled into a tall, large-diameter shape for enhanced cooling. And you can't beat that

polished finish; it might as well be chrome! The heads are available for a variety of engines, including the O.S. CV-R shown here. Crazy Nut also offers 7075 aluminum shock towers for OFNA buggies and other vehicles, as well as 5-spoke sedan wheels. Beautiful.

Heat-sink head for O.S. CV-R .15—CNR1200; \$55. Front shock tower for OFNA GT LX—CNR6001F; \$25. 7075 aluminum sedan wheels—CNR5200; \$120. Crazy Nut Racing; crazynutracing.com.





ATOMIK PERFORMANCE RC ACCESSORIES F150 Baja body for Associated RC10GT

Put away your paint and scissors; Atomik does all the finishing and trimming for you. Along with a Ford F-350 for the Traxxas T-Maxx, Atomik offers this F150 Baja shell for the Associated RC10GT. The aggressive look includes plenty of scoops and cooling holes, and a full decal sheet and separate wing are also included. In addition to the "Swoop" pattern shown here, there are "Jagged Stripe" and "Flame" variations, all in a variety of color combos. Still wanna paint your own? Atomik sells clear bodies, too.

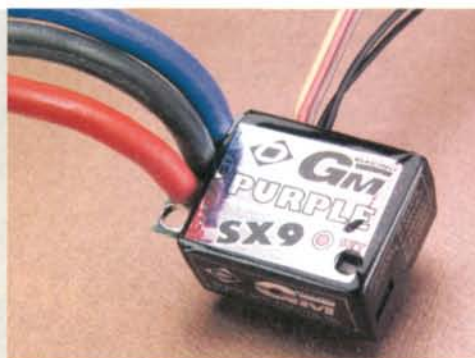
F150 Baja finished body for RC10GT, Swoop teal/white—103-013; \$33.

Atomik R/C (805) 499-7003; atomikrc.com.

GM RACING SX9 Purple ESC

GM's newest racing ESC is among the smallest available, and it's the choice of none other than Masami Hirotsuka. The purple box can handle 4 to 7 cells and is totally tunable via computer interface with GM's Commander charger. Or, just by using the SX9's setup button, you can program custom settings for current limiting, max brake, drag brake and throttle curve. The power wires are attached to an external board for easy replacement, and the required capacitors and other installation items are included. SX9 Purple ESC—GMM2853; \$200.

GM Racing; distributed by Horizon Hobby Inc. (217) 355-9511; horizonhobby.com; gm-racing.com.



OFNA RACING Offset-neck fuel bottle

A fuel bottle is a fuel bottle, right? We thought so, too, but this new OFNA bottle is something different. It has a nice, squishy body for easy squeezing, the red-anodized filler tube stands out from the blue-anodized crowd, and its 6mm diameter makes for fast filling. But it's the offset neck position we really like; it improves pouring control and makes it easier to access the filler cap. The crud-cap with lanyard is a nice touch as well because we always lose our fuel-bottle caps!

Offset-neck fuel bottle—10157; \$11.95.
OFNA Racing (949) 586-2910; ofna.com.

LAST LAP

If you had an unlimited budget, a machine shop and a team of engineers working for you, what type of race car would you design?

I'd love to build a true all-terrain RC car that could race effectively on a track that included on-road and off-road surfaces, like a motorcycle TT race. Tenth-scale rally cars never really worked out in the dirt, but I think an 1/8-scale, buggy-based car could work.
Mike Bell

I would build a full-suspension, nitro-powered NASCAR stocker with the engine in front, a drive shaft going to the rear diff and a fully adjustable tube-frame chassis—just like the real thing. It would resemble a Tamiya

Mountaineer but would be nitro-powered for the street.
Tom Jones (not that Tom Jones)

I would build a totally minimalist touring car just for carpet racing. It would be like a pan car but would have 4WD and be totally lightweight, with a T-plate rear end and micro-shock suspension.
Big Frank

I was going to say a 4WD 1/12-scale car, but I think Kawada already made one—with chain drive, maybe?
Edgar Newton

How about an amphibious race car? You'd have to cross a swimming pool on every lap. Can you guess that I'm a boat guy?
Ralph Billits

I don't think I could improve on anything because today's cars are so good. I think a truly high-performance monster truck has yet to be invented. Someone needs to build a truck that can do all the things a monster does but without crazy amounts of dive, squat and body roll.
George Azarian

NEXT MONTH'S QUESTION

The Electric Off-Road Worlds will soon be upon us. Who will win 2WD and 4WD?

Respond by clicking
"Last Lap" at
rccaraction.com.

UNDER THE HOOD

Tony Neisinger's
Lauterbacher L3SS



The Lauterbacher L3SS is a marvel of German engineering. All the graphite and CNC aluminum components are standard, and this explains why the car sells for more than \$2,000. Tony had a special steering-servo mount made so he could use a pair of standard-size Airtronics 94358 servos in place of the larger, heavier 1/4-scale servo that's commonly used in 1/15-scale racing. Two additional 94358 servos are used: one operates the throttle and rear brake, and the other puts the yank on the front binders.

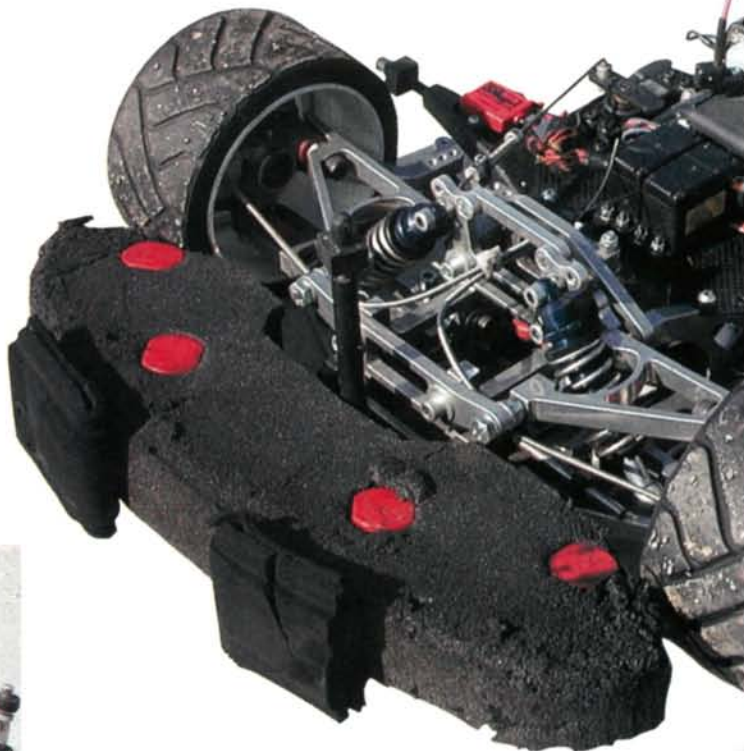
RACE GEAR

Radio Airtronics M8
Receiver Airtronics 92836
Steering servos (2) Airtronics 94358
Throttle/brake servo Airtronics 94358
Engine Zenoah 6230

Pipe Lauterbacher 4-chamber
Gas 87-octane with Mobil 2-stroke oil
Tires PMT Kronos
Body Lauterbacher Honda Accord

SETUP

	Front	Rear
Camber	0 degrees	1.5 degrees (left); 1 degree (right)
Caster	12 degrees	—
Toe	1.5 degrees out	2.5 degrees in
Ackerman	Middle hole on steering arm	—
Ride height	12mm	12mm
Shock fluid	7,000WT	4,000WT
Shock piston	2-hole	2-hole
Shock spring	Lauterbacher Gold	Lauterbacher Blue
Upper shock mount	Middle hole on tower	Upper inside on tower
Swaybar	Yes (tightest position)	Yes (medium tension)



This tuned pipe looks as though it belongs on a motorcycle or shift kart instead of on an RC car. The pipe has four chambers to provide greater torque around the lower rpm range. To keep the vehicle clean and eliminate oil buildup on the left rear tire, which can cause handling problems, the exhaust fumes are directed through the rear. A custom kill-switch mount is attached to the rear shock tower so that the button can be accessed through an opening in the body. This particular mod is required by ROAR.

FACTORY DRIVER HOT MOD

Tony made a 5-cell, 6V pack out of "A"-size, 2700mAh NiMH cells. These cells are larger than typical "AA" batteries but have the capacity of sub-C batteries. The A batteries are much smaller and lighter than sub-C cells, and that's why Tony uses them. The Deans Ultra Plug sticking out of the not-so-attractive green electrical tape makes it much easier to charge the cells.



The L3SS features independent front disc brakes. The rotors are machined out of a fiber material that, according to AP Technologies, operates with less heat than typical steel rotors. Steel calipers with laminated pads put the pinch on the rotors. A super-high-torque servo is required to operate the front disc-brake system. With more than 200 oz.-in. of torque, the Airtronics 94358 is up to the task.



SOURCE GUIDE

AIRTRONICS (714) 978-1895; airtronics.net.

AP TECHNOLOGIES (818) 394-2055; apt-racing.com.

LAUTERBACHER; distributed by AP Technologies.

PMT KRONOS; distributed by AP Technologies.

ZENOAH; distributed by ISC Intl. (317) 844-1978.

5 QUESTIONS

DRIVER:

Tony Neisinger

AGE: 41

LAST BIG WIN:

ROAR 1/5-Scale Nats



SPONSORS: AP Technologies, Airtronics and Kimbrough

WHEN I'M NOT RACING, I: raise my beautiful family and spend as much time with them as I possibly can.

RC CAR ACTION: It's great to see you racing again, Tony; congratulations on your victory at the ROAR 1/5-Scale Nats. What made you decide to compete at this event?

TONY NEISINGER: Thank you very kindly. Unfortunately, working and raising a family doesn't allow very much time off to compete at large racing events. I was asked by Eric Poholsky of AP Technologies to race the Lauterbacher L3SS car at the 1/5 Nats, and because KZ Speedway is not far from my home, I was thankful for the opportunity.

RCCA: Did you have adequate time to practice and get the car (and yourself) dialed into the massive KZ Speedway track?

TN: Yes, definitely. The car handled very well right from the start; not surprising, because Eric is very familiar with the car and the track. I spent a few days practicing at KZ Speedway before the event, and I also spent time with Eric and the car.

RCCA: Did you think you had a shot at winning the championship before the first round of qualifying? If not, when did you realize that things were starting to look good?

TN: The moment Barry Baker's car broke during the Main ... just kidding! Yes, I absolutely felt I had a shot at winning. After a week's worth of practicing, I felt very comfortable with the car and thought I had a chance to do very well. Anything can happen in racing, and the cards definitely fell in my favor that weekend.

RCCA: What's the biggest difference between driving a 1/10-scale touring car and a giant 1/5-scale vehicle?

TN: Aside from the greater weight transfer that causes larger, 1/5-scale cars to react more slowly, the biggest difference is in the strategies needed to set up and drive the car as hard as possible without overheating the tires—especially in 1-hour Mains. Fifth-scale cars closely resemble full-scale cars, and that's why I enjoy racing them.

RCCA: Do you plan to race the L3SS at the 1/5-Scale Worlds this year?

TN: I would be very happy to attend the Worlds running the L3SS and working with Eric, if my schedule permits. Eric's time, knowledge and experience, along with running a great car, were the biggest factors for our success at the Nats. I know this combination can do well at the Worlds.



INTERNATIONAL SEDAN

Every two years, the world's fastest, most competitive drivers gather to compete for the most prestigious title in RC racing—the IFMAR World Championship. IFMAR trophies are the RC equivalent of hockey's Stanley Cup, baseball's World Series trophy and soccer's World Cup, so it shouldn't come as a shock that the 2002 1/10 On-Road IFMAR Worlds featured almost 100 drivers from 14 countries. Cincinnati's Tri-State Auto Racing Club played hosts in 2002.

Right: Mark Pavidis is such a dedicated racer that it's no wonder he took home the 200mm World Cup trophy.





Ten of the fastest touring-car drivers on the planet prepare to start the 200mm A-main. They may look relaxed, but the intensity and concentration on the drivers' stand was impressive.



PHOTOS BY STEPHEN BESS

SLAM!

by Stephen Bess

IFMAR 1/10-SCALE NITRO ON-ROAD WORLD CHAMPIONSHIP



Left: Brian Berry, his father and proud Serpent owner Peiter Boviets celebrate Serpent's 235mm World Championship.



IFMAR qualifying. Every car was released alone on its own timer (to avoid having pileups). Each driver was given several opportunities to run his best without traffic.





All the cars were lined up for concours judging and spectator viewing.

QUALIFYING— FASTEST SEDANS!

After Monday's open track practice and opening ceremonies, the three days of qualifying began on Tuesday. The track was prepared well and the weather was great, so the 200mm and 235mm cars were amazingly fast. Lap times were around 24 seconds for the 235mm cars, but the fastest laps of the day came from the 4WD 200mm touring cars! Their traction advantage allowed them to run nearly a full second per lap faster than the 2WD 235mm cars—impressive, considering that the 235mm cars use big-block .15 engines and super-wide rear tires. Qualifying was set at 10 minutes (which brought pit stops into the mix), and IFMAR

starts were used with each driver on his own clock. IFMAR qualifying mandates that every car be released several seconds after the previous car to spread out the field and to allow every driver to lay down the fastest laps possible.

■ **235mm** Michael Salven and his Serpent teammates dominated the qualifying. Serpent's Impact chassis almost exclusively supports the 2WD 235mm racing class, but one car of a different brand competed in the event—STS's Mad Dog. Imported by CRC Racing and piloted by CRC drivers Josh Cyrul and Frank Calandra, this car made a strong showing. After four qualifying rounds, Michael Salven had posted four 26-lap performances with a best of 26/10:09.16, and Josh Cyrul was only 4 seconds off the TQ pace at a 26/10:13.61. Ralph Burch Jr. of Serpent USA placed third, and Britain's Mark Green and the U.S.'s Marty Barnes rounded out the top five.

■ **200mm** This was by far the most impressive class to watch, especially on the 260-foot-long back straight. On the back straight, the 235mm cars were consistently radar clocked at around 60mph, and the 200mm cars hit around 55mph, yet they were, on average, 0.5 second faster than the 235mm cars; this must mean that the



Opening ceremonies at the 2002 IFMAR Worlds were spectacular.

200mm cars were faster in the turns.

Associated's Nitro TC3 dominated. With six Nitro TC3s in the top 10, Associated's shaft-driven vehicle was by far the fastest at the event. Barry Baker piloted his NTC3 to a mind-boggling 26/10:04.27 TQ, and Serpent's Michael Salven was a mere 3/10 second behind at 26/10:04.52. Mark Pavidis and Billy Easton drove their way into the third and fourth spots, respectively; Serpent's Mark Green filled the fifth.

FINALS

■ **235mm** The 235mm final was a nonstop ride on the adrenaline express, as Josh Cyrul and Brian Berry battled it out for an hour and held nothing back. At the starting tone, Cyrul grabbed the holeshot with Berry in pursuit and

WHO KARTED?

Team Associated's and Team Serpent's drivers managed to keep their competitive juices flowing during a rainy day by scouting out a topnotch indoor go-kart racing facility. Fifty dollars bought each of these hyper-competitive RC guys two qualifier heats, A- and B-mains with bump-ups, computer printout time slips and a not-so-F1-looking white helmet for cranial protection. Although the go-karts were "equally powered," flyweights such as Amezcua and Billy Easton used their size advantages to smoke the field.

Between yelling and arguing over which go-kart pushed too much or had the best tires, the Associated and Serpent teams sweated their way into a good time while somehow managing not to kill one another. Mark Pavidis foreshadowed his 200mm World Cup win with a spectacular B-main win to bump into the go-kart A-main, in spite of his aching forearms and hands. "Wrestling that kart around the track felt more like wrestling a bear," said an exhausted Pavidis, who proved that, despite an obvious weight handicap against the rest of the field, superior driving skills conquer bad horsepower-to-weight ratios every time.



Far left: Team Associated's Travis Amezcua buckles in before his win, with team manager Curtis Hustling and Billy Easton in line behind.

Center: think pro RC drivers are competitive on the RC track? Associated's Barry Baker studies his go-kart lap times just as closely as his RC laps.

Left: Mark Pavidis, multiple RC national and world champion, bumped from the go-kart B-main into the A-main after a ballistic driving performance that left his hands numb. Mark proves that driving skills can overcome weight disadvantages!



Mark Pavidis' winning Associated Nitro TC-3. Mark drove a flawless race and managed to beat Josh Cyrul by 3 seconds.

the rest of the field battling for third. After only 10 laps, TQ Michael Salven had mechanical problems and fell out of contention. During lap 30, the final places were set (though not in this order): Cyrul, Berry, and Julius Kolff were in first, second and third respectively. Cyrul led with his STS Mad Dog, driving with surgical precision from laps one to 137. After a slightly longer than usual pit at lap 137 (6.5 seconds), Cyrul fell to second behind a charging Berry.

Berry, who had driven consistently enough to hang right behind Cyrul for 137 laps, took advantage of his lead. He managed to creep away from Cyrul, stretching his fuel mileage until he was forced to pit four laps later with only 2 minutes to go in the race. Knowing that Berry's vehicle did not require a full tank to make it to the end of the race, his pitman (his father) pulled off a brilliant splash-and-go that took 5 seconds off Berry's lap time. He shot out of the pits at full throttle, fractions of a second ahead of Cyrul. The final eight laps were awesome, as Cyrul chased Berry and, with 40 seconds to go, cranked off the fastest lap of the race. Berry nevertheless managed hold the lead

and cross the line 3 seconds ahead of him to thunderous cheers and screams for the two racers who had provided one of the most exciting IFMAR finals—if not the most exciting final—ever.

■ **200mm** The 60-minute final began with TQ Barry Baker taking a quick lead, but a mere five minutes into the race, he smacked his car into the boards before the straightaway and was knocked out of the race for good. Although Baker's pit crew fixed his car, he missed nearly 20 laps and was too far out to recover.

The real battle was between Associated's Mark Pavidis, Trinity's Josh Cyrul and Serpent's Michael Salven. Salven quickly took over Baker's lead, but he broke, and he fell out of the race completely near the 40-minute mark. From lap 82 until the finish on lap 151, Pavidis held first while fending off Josh Cyrul in yet another aggressive, adrenaline-pumping match. Whenever Cyrul appeared to be gaining on Pavidis, he was forced to pit for fuel or made a tiny mistake that cost him time; Pavidis continued to drive flawlessly to the win. In an unbelievable, déjà vu finish, Pavidis crossed the finish only 3 seconds ahead of Cyrul.



Barry Baker fails to entertain Serpent Germany's Michael Salven with his best '80s robot impression. Barry did, however, impress the crowd with his blistering 200mm touring car top-qualifying time.

WRAP-UP

Though Josh Cyrul didn't win a championship, he deserves plenty of recognition for his highly memorable performance in the 200mm and 235mm finals; he was the only driver who earned a podium spot in both classes. The Cincinnati Tri-State Auto Racing Club provided these top on-road racers with one of the best racing facilities anyone could ask for. I congratulate Brian Berry and Team Serpent, on their 235mm IFMAR World Championship and Mark Pavidis for winning the first ever 200mm IFMAR World Cup.

YOUR CHEATIN' PLUG

IFMAR rules regulate glow-plug selection for competition .12 engines; only standard, "non-turbo" plugs are allowed. Turbo plugs, which feature a tapered body and a conical tip, provide up to a 10-percent increase in power and rpm production over a standard, non-turbo plug. One racer had a qualifying run thrown out because he used a "regular" glow plug with a specially machined conical nose (and a specially machined head button) to provide "turbo" plug performance.





INSPECTOR GADGETS

Unlike club races, where it's "run whatcha brung," IFMAR World race vehicles undergo thorough inspections. Each racer's vehicle passes through tech inspection after each qualifying heat (and each vehicle is tested after final heats) to ensure that an array of measurement standards are met. Engines are inspected for glow-plug type, port configuration and volume; race fuels are inspected for nitro percentage (using specific-gravity tests); and chassis and race bodies are checked for weight, width, height and length. Any vehicle in violation of any standard, no matter how small the margin of error, is instantly disqualified for that particular heat.

SMOKIN' SMALL-BLOCKS

Cincinnati's massive on-road track, with its 200-plus-foot back straightaway, is the ultimate test of a small-block engine. Here's a quick breakdown of the higher-finishing small-block engines in the popular 200mm class.

■ PICCO—TOP QUALIFIER 200MM; 2 OF 10 IN THE A-MAIN

In qualifying, every member of Team Associated and Joel Johnson of Team Trinity ran the latest rear-exhaust Picco.12 engine. The Picco engines ran very well, taking the TQ position and putting Baker, Pavidis and Easton in the Main. They showed a good balance of speed on the straights and strong acceleration out of the corners. Pavidis switched back to his modified RB engine for the Main, but Easton and Baker stayed with the Picco engines for the big show.

■ NOVAMEGA—SECOND QUALIFIER; 6 OF 10 IN THE A-MAIN

Serpent's NovaMega line of engines, manufactured by Novarossi, powered all of the talented Serpent entrants at the Worlds. The NovaMega engines were very closely matched to the Picco engines, with a good balance of top speed and acceleration, and with a possible edge on the bottom end. Top speeds on the straight were virtually identical.

■ RB—WINNER; 1 OF 10 IN THE A-MAIN

Mark Pavidis, who qualified with a Picco engine, opted to change to an RB engine before running the A-main. The RB engine, which is also manufactured by Novarossi, showed similar performance to the NovaMega engines, but demonstrated a slight edge coming out of the corners and a similar top end compared to the NovaMega and Picco engines.

■ SIRIO—SECOND PLACE OVERALL; 1 OF 10 IN THE A-MAIN

Team Trinity's Josh Cyrul was the only top-level driver who ran a Sirio engine. At the time of the race, it was virtually brand-new to the market, so there weren't that many available. In every run, Josh Cyrul's Sirio .12 was king of the back straightaway. Many other team drivers commented on the noticeable advantage the Sirio engine gave him. ■

200MM TOURING CAR

FIN.	QUAL.	DRIVER	CHASSIS	ENGINE	PIPE	FUEL	RADIO	TIRES
1	3	Mark Pavidis	Associated	RB/O'Donnell	Associated	O'Donnell	Airtronics	Jaco
2	7	Josh Cyrul	Trinity	Sirio	Trinity	Trinity	KO Propo	TRC
3	5	Toshiyuki Iwamoto	Serpent	NovaMega	TOP	BK	Sanwa	Racing Art
4	8	Mark Green	Serpent	NovaMega	NovaMega	BK	KO Propo	Ellegi
5	10	Brian Berry	Serpent	NovaMega	NovaMega	BK	Airtronics	Ellegi
6	4	Billy Easton	Associated	Picco/O'Donnell	Associated	O'Donnell	Airtronics	Jaco
7	1	Barry Baker	Associated	Picco/O'Donnell	Associated	O'Donnell	Airtronics	Jaco
8	9	Ralph Burch Jr.	Serpent	NovaMega	NovaMega	BK	KO Propo	Ellegi
9	2	Michael Salven	Serpent	NovaMega	NovaMega	BK	Sanwa	Ellegi
10	6	Marty Barnes	Serpent	NovaMega	NovaMega	BK	JR	Ellegi

235MM 2WD

1	5	Brian Berry	Serpent	NovaMega	NovaMega	BK	Airtronics	Ellegi
2	2	Josh Cyrul	STS	JP	Novarossi	Trinity	KO Propo	TRC
3	7	Julius Kolff	Serpent	NovaMega	NovaMega	BK	Sanwa	Ellegi
4	6	Uwe Baldes	Serpent	NovaMega	NovaMega	BK	Sanwa	Ellegi
5	8	Marty Barnes	Serpent	NovaMega	Mega	BK	JR	Ellegi
6	9	Frank Calandra	STS	RB	RB	Blue Thunder	JR	CRC
7	10	Don Jones	Serpent	NovaMega	NovaMega	BK	JR	Ellegi
8	3	Ralph Burch	Serpent	NovaMega	NovaMega	BK	KO Propo	Ellegi
9	1	Michael Salven	Serpent	NovaMega	NovaMega	BK	Sanwa	Ellegi
10	4	Mark Green	Serpent	NovaMega	NovaMega	BK	KO Propo	Ellegi

Prep your car for a 1-hour Main

20 tips to race for 60 minutes by Lance Westcott

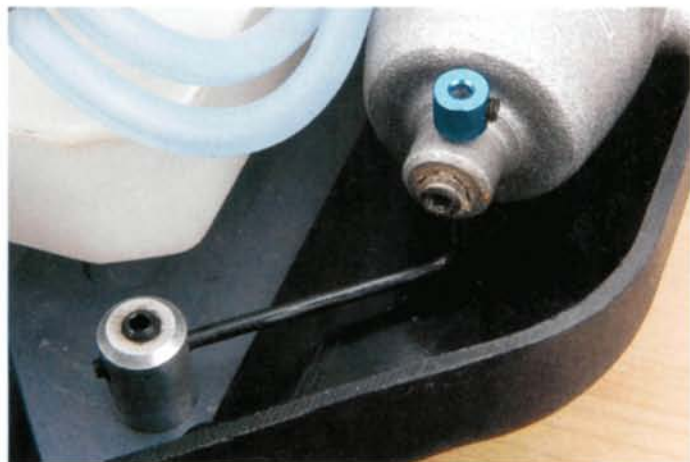
There is no greater challenge in RC racing than an hour-long nitro Main. Sixty minutes of racing is the ultimate test of driver concentration and vehicle preparation, and nothing will help your concentration more than knowing that your vehicle is properly prepped for the big hand to make a complete lap on the clock. The tips shown here will get your ride ready for the big race, but you don't have to be a racer to use 'em; to your car, an hour of nonstop play is the same thing as an hour of competition.

Exhaustive preparation

FLANGE THE PIPE AND MANIFOLD. The idea is to give the parts a little more "bite" on the silicone coupler by creating a flange on the parts. Insert a round-shaft screwdriver into the pipe opening, pull it against the edge and use a stirring motion as you apply pressure to create a flange. Do the same for the manifold, and slip the coupler over the parts. How is that coupler, by the way? If it's hard and discolored, replace it now. Use one that's long enough for two wide zip-ties to fit over each end.



INSTALL A COLLAR ON THE PIPE HANGER. Re-bend your car's pipe hanger so that an extra 5mm or so extends past the pipe mount. Now you can slip a linkage collar over the wire as extra security against the pipe slipping off the hanger. Use thread-locking fluid on the pipe and collar setscrews.



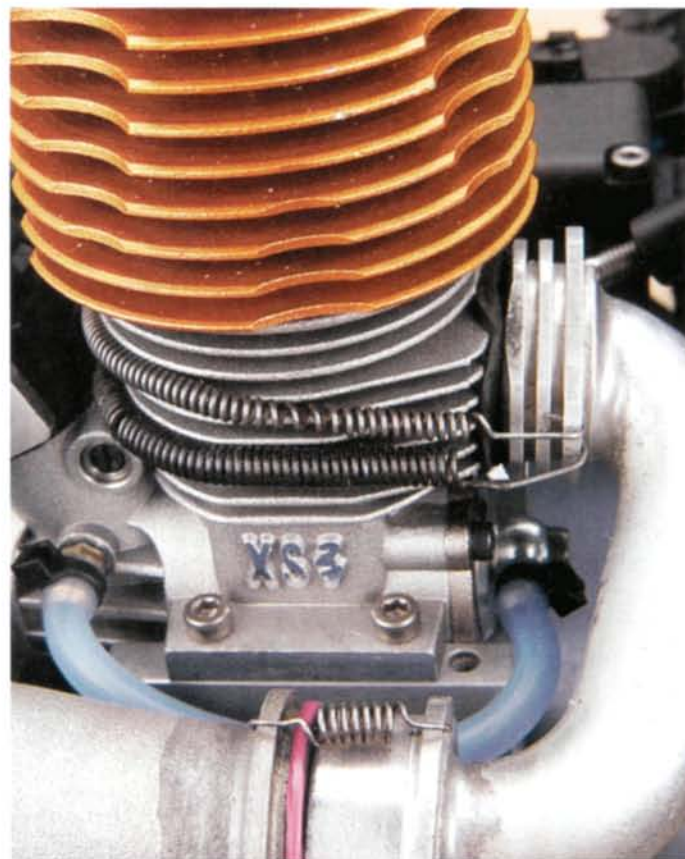
Replace before you race

■ **Clutch bearings.** If your clutch bell spins forever, that's a good indication that you need to replace its bearings, even if they feel smooth. The very low resistance means that most of the grease originally packed into the bearings has been flung out or cooked off by engine heat. They may be fine for 5-minute qualifiers with long, cooling breaks in between, but during a one-hour Main, the bearings are likely to overheat and seize, which will end your race. Install fresh bearings for peace of mind.

■ **Glow plug.** Running nonstop for an hour at race-pace is torture to a glow plug; if it's anywhere near the end of its useful life, the Main will kill it. Install a fresh plug to improve your chance of running the duration. Just make sure that you replace your glow plug with an identical model; you don't want to goof up your engine's state of tune just before your race.

■ **Transmitter, receiver, glow-starter and starter-box batteries.** You don't have to replace these—just recharge them. If you haven't upgraded to a rechargeable receiver pack yet, do it now; alkalines aren't good for long races.

DOUBLE-SPRING THE HEADER. Twice the springs, half the chance of the manifold coming loose.



Zip-ties! Zip-ties! Zip-ties!

If there's one thing every nitro racer needs plenty of, it's zip-ties. Keep a stash of the thin 4-inch variety on hand; they're perfect for cinching these components.

BATTERY CONNECTOR. If your car's receiver battery unplugs itself midrace, your run is over (and your car will go out of control). Spread the plug wires and zip-tie as shown.



FUEL TUBING. An extra band of fuel tubing over the tank, carburetor and pipe fittings is a good idea, but nothing beats a zip-tie on each fitting for total security. Don't yank the zip-tie so tightly that it cuts the tubing or squirts it off the fitting; just cinch it tightly enough to prevent the tubing from sliding past the step on the fitting.



AIR FILTER. Install one zip-tie around the carburetor base and another around the filter neck. If the filter uses a long silicone coupler, it's also a smart idea to support it with a wire standoff—more on that later.



BODY CLIPS. Once you're certain you won't remove the body again before the race starts, wrap a zip-tie around the open end of each body clip so a crash or contact with another car won't pop off a body clip.

Stuff to make

AIR FILTER STANDOFF. You'll need $\frac{1}{16}$ -inch music wire to make the standoff; check the K&S display at the hobby shop if you don't have any scraps on hand. Use needle-nose pliers as shown to bend one end of the wire into an eyelet, and clamp it beneath the screw that secures the filter cap; you might need to add a washer.



Next, bend the wire to meet a convenient screw on the radio tray or elsewhere on the chassis. Make another eyelet, trim off the excess wire and clamp it beneath the screw to install the completed hanger. Now the filter won't flop around, which makes it far less likely to come loose.

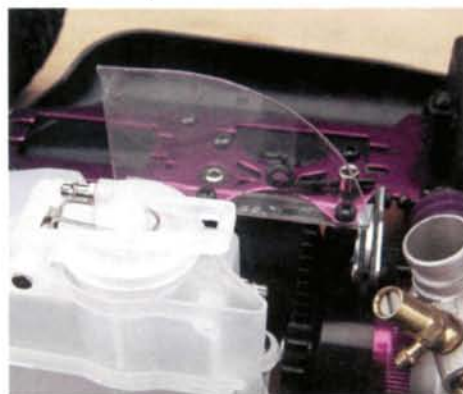


JOEL'S SWITCH HOLDER. Some guys avoid switch problems by plugging the receiver battery directly into the receiver, but that isn't practical now that virtually all nitro cars have enclosed receiver boxes. Joel Johnson turned us on (no pun intended) to this little trick, which requires only a scrap piece of Lexan. Cut the Lexan using the pattern shown here, and install it as shown. Swing the guard over the switch, and your radio system will be protected against accidental turn-off.



SPLASH GUARD. You'll make at least four stops for fuel during the Main, and there won't be time to worry about neatness. When the fuel

is flying, chances are that a good squirt will find the chassis before it finds the tank. To prevent your servos (and brake system, if you're prepping an $\frac{1}{8}$ -scale buggy) from getting fouled by fuel, construct a Lexan shield to fit alongside the tank. The size, shape and mounting method



will vary according to the vehicle, but basically, all you have to do is bend the bottom of the shield into a "foot" and make a couple of holes so the radio tray's screws can clamp it into place.

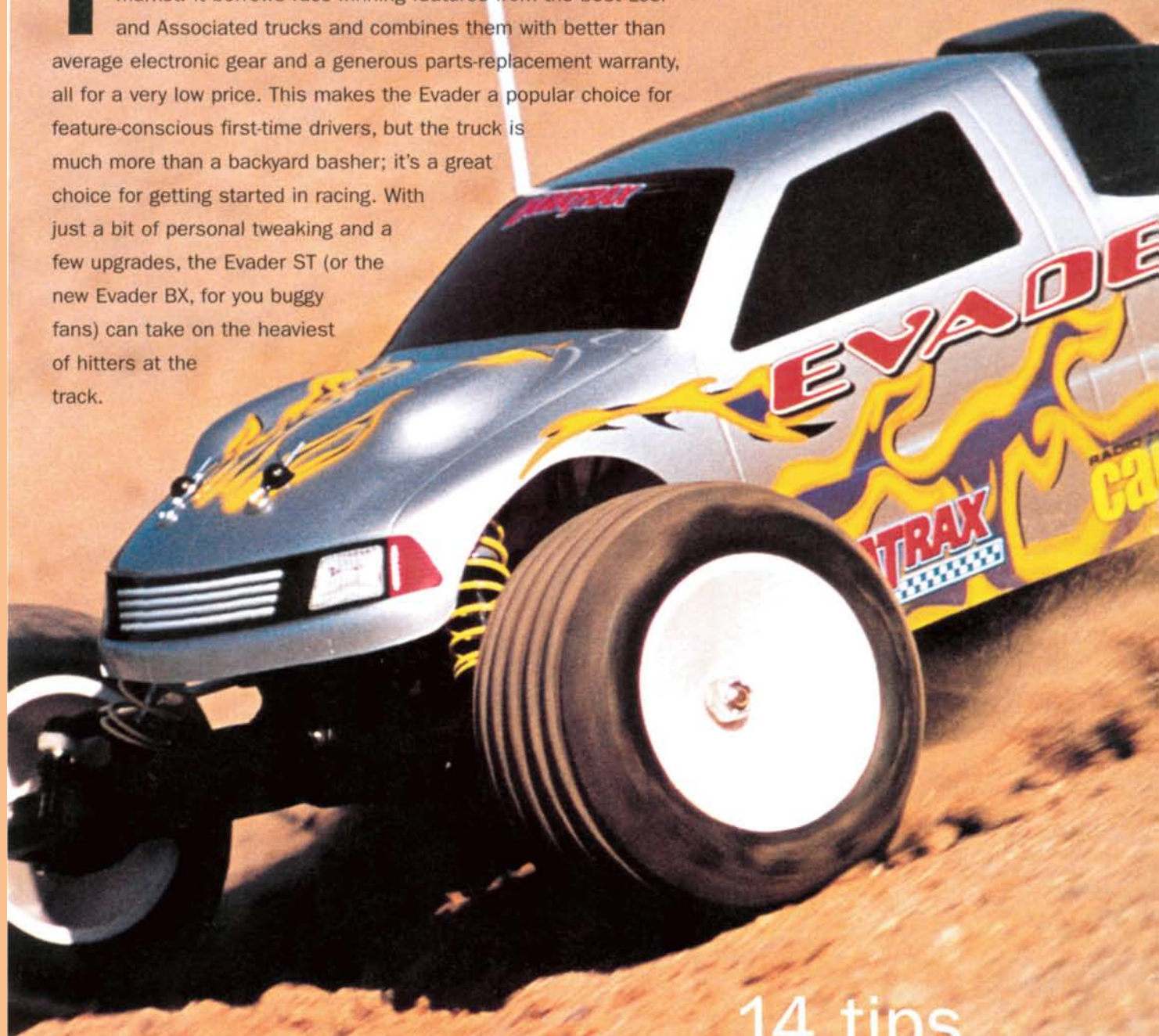
Inspect and thread-lock everything

There's nothing like an hour of racing to shake your car back into kit form. You really should check every fastener on the car for tightness, but if you don't have time, at least make sure that you check and thread-lock these potentially race-ending hot spots before you hit the starting grid.

- Wheel nuts
- Head screws
- Engine-mounting screws
- Carburetor-mounting screw
- All linkage setscrews
- Universal-joint or CVD setscrews ■

HOW TO

The DuraTrax Evader ST is one of the best RTR deals on the market. It borrows race-winning features from the best Losi and Associated trucks and combines them with better than average electronic gear and a generous parts-replacement warranty, all for a very low price. This makes the Evader a popular choice for feature-conscious first-time drivers, but the truck is much more than a backyard basher; it's a great choice for getting started in racing. With just a bit of personal tweaking and a few upgrades, the Evader ST (or the new Evader BX, for you buggy fans) can take on the heaviest of hitters at the track.



14 tips
to win!

Make your DuraTrax Evader race-ready

by Brian D. Leslie

Suspension and steering free-up

The Evader's suspension is a bit stiff (which is far better than sloppy), and its components require a little massaging to up its performance to race standards. A freely moving suspension is critical to the truck's overall handling characteristics; here's how to free up the suspension parts—for free!

BALL CUPS AND BALL STUDS. Remove all the tie rods. Place a ball joint in an electric drill. Apply a little rubbing compound to one end of the control-rod's ball cup, and snap the ball cup onto the ball joint. Using the drill, spin the ball joint in the ball cup for 30 seconds or so. Remove the ball cup, and clean it thoroughly with motor cleaner. Snap the ball cup back onto one of the truck's ball joints. The control rod should move freely without resistance. "Freely" means that the rod should fall under its own weight without having anything attached to its other end. If one doesn't drop freely, repeat the process outlined above until all the control rods move freely in all directions.

TIGHT HINGE PINS. Just as the ball joints were, the A-arm hinge pins were a little tight. Disconnect the shock from the A-arm. Remove the inner A-arm hinge pin, and place one end in the drill. Put rubbing compound on the pin, and then spin the pin in the A-arm mounting holes for about 30 seconds.

Clean all parts thoroughly and reassemble them. The A-arm should fall freely with just the weight of the wheel. Repeat this process for all the inner and outer hinge pins.



SERVO-SAVER FIX. My Evader's bellcrank-mounted servo-saver was tight and tended to bind, and that would have prevented it from "saving" the servo in a collision. I went through three sets of plastic gears in the stock servo unit until I had rebuilt the servo-saver as described here:

1. Loosen the servo-saver by rotating the knurled aluminum nut counterclockwise. This will take some pressure off of the saver itself.

2. Once it's loosened, use your hand to force the servo-saver open, and then apply some light oil (motor bushing oil works well) to the surfaces that are meant to slip against each other.

3. Tighten the nut $\frac{1}{2}$ to 1 full turn. If you find that you don't have enough turning power in the corners, it means that the saver is working too easily; tighten the nut another turn or until the saver stops slipping under hard cornering.



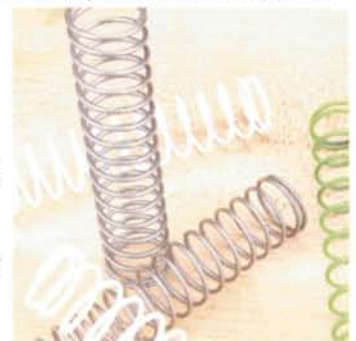
Suspension setup

Once it has been freed up, the Evader's suspension is pretty good. The stock spring selection suits most conditions, but the truck's light damping makes it a tad bouncy over the rough stuff, and the front end is a bit pushy in the turns. Here is a basic setup that should get you in the ballpark before you hit the track.



SHOCK FLUID. Follow the Evader's manual as a guide when you disassemble and reassemble the shocks. Drain the factory-installed 20WT oil from all four shocks. Thoroughly clean all the shock components, including the shock body, with denatured alcohol or motor cleaner. Fill the shocks with 40WT silicone fluid. This will increase shock damping, so the springs won't rebound as aggressively, and it will take some of the bounce out of the truck when it goes through the rough stuff.

SHOCK SPRINGS. Pick up a full set of DuraTrax front and rear shock springs: the set includes "extra soft," "soft," "medium" and "hard" springs. Start by replacing the front springs with the white soft springs (part no. DTXC9232) to sharpen the Evader's cornering capabilities and eliminate the push. Tracks often require different setups, and with a full complement of springs in your pit box, you can experiment to see what works best for you. Change one end of the truck at a time so you'll be able to feel the difference. Don't make too many changes at once, or you will be confused about which change did what.



RIDE HEIGHT. After each spring change, reset the chassis' ride height (the distance from the bottom of the chassis to the ground) using the ride-height adjusters on the threaded shock bodies. Be certain to adjust the left and right shocks equally so that the distance from the top of the shock to the ride-height collar is the same on both sides. When fully loaded with a battery, a motor and radio gear, the rear A-arms should be parallel with the ground. The front end should be just slightly higher; instead of being parallel with the ground, the front A-arms should slope downward very slightly toward the front wheels.

Tires and wheels

The Evader's soft compound tires offer good traction, but when they wear out look at what the fast guys at your track run before you buy new ones. Don't forget to ask about their foam inserts as well. Once you have selected new shoes and inserts, check out DuraTrax's colored (yellow, blue and green) one-piece wheels. They offer a great way to add a personal touch to your ride. If your shop doesn't stock DuraTrax wheels, use Team Losi truck wheels (or any wheels designed to fit Team Losi trucks).



Racing electronics

The Evader's supplied electronics are excellent, but they may not be race legal at your track. Here are a few things you can try.

MOTOR. Stock-class racing rules require a 27-turn stock motor, so the Evader's included 20-turn Photon Speed motor isn't race-legal. But before you fork over

the cash for a new stock motor, ask your track's operator if he'll let you race with it; as a first-time racer, it will take a lot more than a slight motor advantage (if you even have one) for you to beat the experienced guys. If you must buy a 27-turn motor, see what the fast racers run, or ask the track's operator which motor is best for the track.



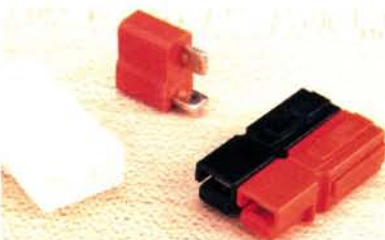
FORWARD-ONLY ELECTRONIC SPEED CONTROL (ESC). The included Sprint ESC can handle motors down to 20 turns, so you're all set for the stock class; however, the Sprint doesn't have reverse-disable. A reversing ESC is a no-no at most tracks. You'll need permission to run an ESC with reverse, and then you will have to promise never to reverse during races.



STEERING SERVO. The stock steering servo is fine for getting started, but once you're ready to challenge the best local drivers, you'll want to upgrade to a faster, more powerful servo. A race truck requires 60 oz.-in. of torque (that's how "strong" the servo is) and a transit speed of 0.19 second or less (that's how long it takes the servo to swing its output shaft from full right to full left). Servo-wiring configurations have been standardized, so you can choose from among all the servo manufacturers.



BATTERY AND MOTOR CONNECTORS. For the sake of convenience, the Evader uses a Tamiya-style battery plug and bullet motor connectors; all stick packs use Tamiya connectors, and the bullet motor connectors allow you to remove the motor without requiring a soldering gun. And though these connectors are reasonably efficient when new, they lose their efficiency with repeated use and increase the power system's electrical resistance; more resistance equals less power reaching the motor. All racers either hard-wire their cars by soldering the wires directly to the battery and motor or use zero-loss connectors such as those offered by Deans, DuraTrax and AstroFlight. These connectors are called "zero loss" because they don't add electrical resistance to the power system (or at least no more resistance than the wire they replaced). If you're handy with a soldering iron, the connectors are easy to install (see the February 2002 issue of *Car Action* for a complete "how to"). If you aren't confident enough to do the job yourself, your local shop can do it for you.



Durability enhancements

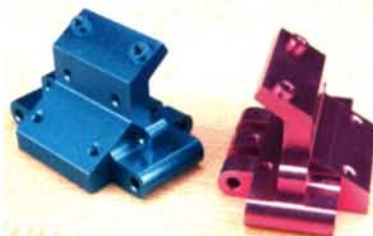
As the saying goes, to finish first you must first finish, and though the Evader is tough (so tough that DuraTrax offers a one-year no-breakage warranty), it never hurts to look for an extra edge in durability. DuraTrax offers a full line of hop-ups for the Evader, but these are the ones that will do the most to make your truck race-proof:

TITANIUM-NITRIDE SHOCK SHAFTS.

Off-road shocks get blasted with rocks and dirt, and this eventually pits the shaft and causes oil to leak out. Titanium-coated shafts are stronger and smoother and can take an off-road beating. They allow you to go longer between rebuilds, and they ultimately keep your suspension in top race form longer. When the stock shafts wear out or are damaged, replace them with DuraTrax's no. DTXC9728 front and no. DTXC9729 rear shafts.

TITANIUM TIE RODS. The Evader's turnbuckle tie rods are about the best steel units I've seen, but titanium is better. Titanium tie rods are standard on factory race trucks for good reason: they're lighter and stronger.

ALUMINUM FRONT BULKHEAD. All the parts of the front suspension are attached to the front bulkhead, making it very susceptible to being damaged during front-end collisions.



DuraTrax's machined-aluminum version—DTXC6807 (blue), DTXC6808 (purple)—will add a little style and a lot of strength to the Evader's front end.

SOURCE GUIDE

ASTROFLIGHT INC. (310) 821-6242; astroflight.com.

W.S. DEANS CO. (562) 634-9401; wsdeans.com.

DURATRAX; distributed by Great Planes Model Distributors (800) 682-8948; duratrax.com.

Get Hemi'd!

Nothing says "power" like a big, blown engine poking through the hood, with its butterfly valves ready to take in a deep breath for the supercharger.

Unfortunately, RC engines don't have superchargers, and even if they did, the engine is always in the rear of the vehicle, far from the hood. But don't let that stop you from adding a supercharged engine to your truck! I'll show you how to make Parma's Hemi engine kit rise realistically from the engine bay of your four-wheeler. It's easy to do and sure to get double-takes at the track.



YOU'LL NEED

- Parma Hemi engine kit—item no. 10412
- Evergreen sheet styrene plastic .040—9040
- Plastic model cement
- Silicone adhesive
- Hook-and-loop tape
- Hobby knife with no. 11 blade
- Enamel paint for plastic models



STEP 1. Position the hood cutout

Cut this template out of the magazine, transfer the template shape to a piece of cardboard or any sturdy flat material, then use it to create an opening of the correct size in the hood where the blower will pass through. Center the template on the hood, and tape it into place; check the view from all angles to be sure that it is positioned properly. Once you're satisfied that it is, trace the outline with a permanent-ink marker.

Parma's Hemi kit includes everything you need to build a complete engine; you even get the wiring. For this project, we'll use only the blower assembly, since the engine block would be hidden beneath the hood.

Engine
cutout
template



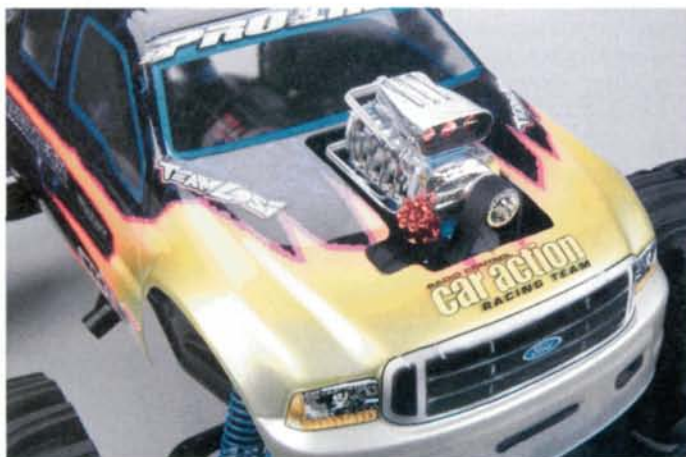
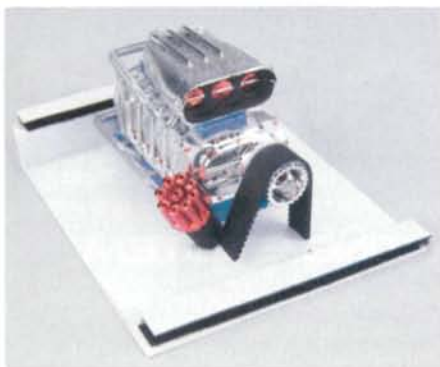
STEP 2. Cut the opening

Use a body reamer to make a hole at the inside of each corner; this gives the opening a nicely finished radius. Make sure that the holes don't go outside the line you drew. Connect the holes using a sharp hobby knife and a metal straightedge to guide the blade. Remember that you only have to score the Lexan; don't cut all the way through it. Bend the Lexan down along the score line and snap it away from the hood. Smooth the rough edges around the opening with a piece of sandpaper; I use an emery board for jobs like this.

STEP 3. Attach the blower

Make a mount for the blower out of plastic sheet; use the same score-and-snap technique as you used before. Attach the blower to the center of the mount using clear silicone. Then, glue the distributor next to the blower. You may have to cut the bottom off at an angle to get it to sit low enough.

Once the adhesive has set, attach hook-and-loop tape to the edges of the blower's base and paint the base flat black. Trial-fit the blower through the hood to make sure that it passes through easily. Pull the protective backing off the top pieces of tape to expose their sticky backs and stick the assembly to the underside of the hood. Apply firm pressure to the mount to help the adhesive stick to the body and the blower mount.



There you have it. Just bit of work makes all the difference to your truck's looks. The nice thing is that if you don't want to wreck the "engine," you can remove it before you run your truck.

TRICK TRUCK STUFF



TAMIYA TERRA Crusher shocks and springs

These new Tamiya shocks are at the top of the Terra Crusher upgrade list. They are gold-anodized and machined to the tightest tolerances. The bodies are partially threaded to allow fine spring-tension adjustment. These direct replacement shocks come in packs of four and include the stock blue springs. Tamiya's new spring set is a nice complement to the new shocks and also works great on the stock shocks. The box comes with four green (soft), four red (hard) and four yellow (super hard) springs.

TGM-02 aluminum damper set—item no. 53545, \$73.99.

TGM-02 setting spring set—53546, \$21.99.

TALK TRUCK!

Send your "4x4" questions and comments to Kevin Hetmanski, kevinh@airage.com.

SOURCE GUIDE

HPI RACING (949) 753-1099; hpiracing.com.

PARMA/PSE (440) 237-8650; parmapse.com.

TAMIYA AMERICA INC. (800) 826-4922; tamiyausa.com.

Prep for Cold Weather

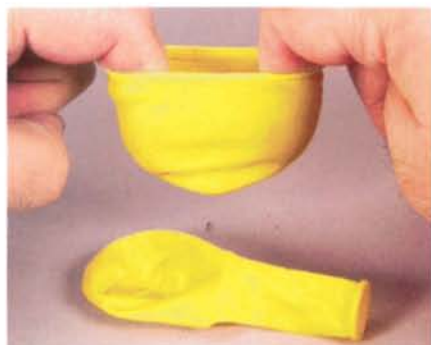
What can you do in winter if you live where outdoor RC is impossible?—pack up your nitro RC equipment and go cold turkey until warm weather arrives? I think not!

Winter can be a fun time to blast around a parking lot or a backyard with a nitro-powered RC vehicle, but you have to prepare for this. Getting ready to run in snow and cold weather requires more than simply wrapping a set of earmuffs around your cranium and tossing on a parka to stay warm; you must prepare your nitro vehicle if you want it to survive. Here's how to have fun with your nitro car or truck when it's freezing outside—without damaging any components.

PREPARE FOR HIBERNATION

ELECTRONICS PREP

RC electronics are the most vulnerable to cold. When snow and ice are subjected to engine heat, they melt into electrical components' worst enemy—water. To protect your components, seal them completely against moisture.



Using balloons is an effective way to seal your electronics from moisture.

1. Some nitro vehicles have “sealed” receiver boxes, but they aren't completely moisture-proof. Protect your radio receiver by inserting it into a large balloon, and seal the balloon's opening with a dab of Shoe-Goo or silicone sealant and a zip-tie. Allow the sealant to cure overnight, and your receiver will be virtually waterproof.



Peel the neck of the balloon back from the wires that go to and come from the receiver, and use a generous dab of sealant to create an airtight seal around the receiver. Finish by pulling the neck of the balloon back down over the wires and securing it with a small zip-tie where you applied the sealant.

2. Next, seal the servo cases with a thin bead of Shoe-Goo; it's easiest to place dabs around the seams of the case and then spread it thinly with a finger. It's also a good idea to seal around the rubber grommet where the wires

exit the servo housing. Sealing the servo's output shaft will require a trip to the hardware store for O-rings. The O-rings should be slightly larger than the servo output shaft's diameter and thick enough only to just fill the gap between the servo-saver and the servo housing. A little grease will lubricate the O-rings and help to create a better seal.



Seal around the servo's rubber grommet and wire harness. These areas are not com-

pletely sealed and may allow moisture into the servo's electronics.



In addition to sealing the servo-case seams with a thin bead of sealant, you should ensure that moisture can't make its way in through the output shaft. Pick up a

small O-ring that is slightly larger than the output shaft's diameter and thin enough to fit between the servo-saver and the servo housing, and install it on the shaft.



The receiver can no longer be attached to the chassis or radio plate with servo tape because it's inside a balloon, but a creatively used zip-tie should get the job done.



3. Finally, seal the receiver battery inside a balloon using the same technique as you used for the receiver. If you can, cover the switch harness with a rubber switch boot, or seal its seams with Shoe-Goo. Now your electronics are protected and are ready to battle the snow and ice.

ENGINE PREP

Your nitro engine may seem impervious to cold-weather woes, but low temperatures can damage internal components. It's obvious that overheating a 2-stroke engine can cause premature wear and even failure, but few of us realize that over-cooling a nitro engine can cause as much damage, or even more. Engines that operate in the 220- to 250-degree F range have been broken in so that their ideal piston/sleeve fit is in that temperature range; running at lower temperatures will wear the components prematurely because they won't heat enough to expand properly for the correct fit. When the engine is very cold, the piston can get stuck in the top of the piston sleeve and snap the connecting rod.

To prevent your engine from running too cold during the winter, you may prep it one of two ways:

1. The most practical option is to apply shiny, silver aluminum tape to the heat-sink head to



Use aluminum tape to partially block the airflow over the cylinder-head's fins and to increase running temps to an acceptable range.

retain heat. (This tape is typically used to seal joints in household ducting, and you'll find it at most hardware stores.) Start by applying a length of tape that will just wrap around the front half of the cooling fins; cover them from top to bottom. Modify the amount of tape used by monitoring engine temperature: use more tape to increase temp and less to reduce it.

2. If you've ever replaced a damaged cylinder head or upgraded to an aftermarket one, you can modify the old head to run in the cold. To retain enough heat, cut some of the fins off the cooling head. Fewer cooling fins will mean less



The three cylinder heads to the left are all made for the HPI .15 FE engine. The wide variation in sizes can result in a wide range of operating temperatures. A couple of fins have been removed from the head on the left to help retain engine heat in very cold weather.



The small cylinder head on this HPI Nitro RS4 MT makes it more suitable for running in the cold. It had been replaced by a larger aftermarket head and was sitting unused on the shelf, but it's great for cold-weather running.

heat dissipation; in very cold weather, cutting fins off the cooling head will bring the engine's operating temperature up to normal. Start by cutting just a couple of fins off the head; then check your engine's running temperature regularly. Once you've arrived at the proper number of cooling fins for optimal engine temperature during typical winter weather, you'll be able to simply swap to your cold-weather head during the winter, and you'll still have an engine you can use when things warm up again. This option is expensive, unless you have an extra head for your engine.

TUNING AND DRIVING HABITS

1. Even when it's cold, it's very important to keep the engine temperature up in the low to middle 200-degree F range. It's also very

Cold-weather break-in?

Should you break your engine in during cold weather, or will that harm it? The answer is simple: no, you should not break an engine in during cold weather because that can cause premature wear. Two-stroke engines need to build enough heat (usually above 200 degrees F) to allow their internal components to expand properly during break-in; without this heat, the piston and sleeve never expand fully and will be worn prematurely by rubbing against each other. When warmer weather comes around, the engine will feel loose and worn out when it reaches its optimum running temperature. If you absolutely must break your engine in when the weather is cold, cover part of the cooling head with aluminum tape. The tape will keep heat in, and your engine will be able to reach its proper operating temperature without requiring over-lean needle settings.

important to understand that I'm not suggesting that you tune your mixture to achieve a specific engine temperature; your fuel mixture needles are NOT thermostats. Instead, you

should tune for maximum performance and then increase or reduce cooling to bring engine temp to within an acceptable range. In a full-size car, fuel mixture is not used to regulate engine temp. The radiator, thermostat and coolant regulate temperature, and the fuel mixture is simply regulated for optimum performance, as it should be with nitro engines. Think of the nitro engine's cylinder head as being equivalent to a radiator, thermostat and coolant system in a big car. If you restrict the airflow by using tape or cutting off a few cooling fins, you'll be able to regulate your engine's temperature somewhat.

2. Don't change your glow plug. The glow plug's temperature rating has no direct effect on its running temperature, and plugs are not rated as "hot" or "cold" to be used in hot or cold weather. The plug ratings are simply a reflection of how they will affect the combustion process, which is largely unaffected by ambient air temperature.

3. Change your driving habits to suit cold weather. Plastic and metal pieces become brittle when they're very cold. To relieve stress on

the suspension components, limit your jumping and, as always, try to avoid stationary objects! A collision with a curb that might be harmless during the summer could break parts in the winter. Have fun, but keep in mind that cold parts are brittle parts.

4. To compensate for the cold, consider using a lighter shock-oil—10 to 20WT less than you use at other times. Liquid silicone thickens when it's chilled.

POST-SNOW CLEANUP

1. After you've run your nitro vehicle in the snow and cold, dry it thoroughly and lubricate all the moving parts with WD-40. Moisture can find its way through nearly every opening, and that can mean rusty metal parts. Ideally, you should blast the entire chassis with compressed air (if you have a compressor); if you don't have access to compressed air, remove as many moving parts as you can, and dry them thoroughly with paper towels.

2. Next, spray WD-40 liberally all over the chassis and into moving parts and bearing areas such as axles, hinge pins, ball ends and all metal parts.

3. Next, remove the glow plug from the engine's cooling head and pour a few drops of after-run oil into the glow-plug hole (Marvel Mystery Oil works well). Remove the air filter, put a few drops of oil into the carb venturi. Reinstall the plug and you've finished. ■

Preheat your engine



Starting a stone-cold engine can be difficult, and it's bad for the engine. It's better all around to preheat the engine somehow so that when you start it, its moving parts don't have to struggle with excessively tight clearances. A heat gun is great for this, but a wall outlet isn't always available. I successfully used one tire warmer wrapped around the cylinder head and connected to a 6-cell pack. It takes about five minutes for the engine to reach 75 degrees F—not hot, but it's a lot better than a starting temperature of 28 degrees. I simply attached a Tamiya-type male connector to the tire-warmer's wires, and I now have a portable engine warmer that helps me to start my engines even in the coldest weather!

A tire warmer attached to a 6-cell battery can heat an engine to a temperature at which it starts more easily, and this also minimizes the risk of wear during very cold weather startups.

Textures, transfers & tape techniques

Everyone wants a good-looking car, and there's no shame in that; our cars and their bodies and paint jobs are often an extension of our personalities and talents. If you've been eager to roll out with something that's a little more complex, but you didn't think your skills were up to the task, this article is for you. We'll explore four easy techniques this month: a fast way to create a hand-cut tribal stripe, a simple shadowing technique, how to use Jackal Hobbies' new internal paint transfers and a really cool textured-paint effect. Any of these will add a new dimension to your next body, but using them in combination can add up to a killer-looking car!



Tribal break-tape template. We're going to break up the paint job by applying an aggressive tribal-style stripe that runs from the beak and diagonally along the sides of the car. On the outside of the body, lightly tack a wide piece of masking tape on each side of the car from the front wheel well up to the spoiler standoffs. With a pencil, lightly mark the standout features, such as the wheel wells and the side ducts of this HPI Viper.



It's all in the wrist. Transfer the strips of tape to a cutting mat. The trick in drawing a curved line is to pivot your wrist, while leaving your arm in place. Use a pencil to draw a single downward arc, and then reposition the image by turning the mat (not your hand) a few degrees clockwise. Start at the top of the first line, and using the same sweeping wrist motion as before, draw a second line that flows just below the first one. You may want to practice drawing the design on paper, but you should end up with a crescent shape that's similar to the one shown here.



Get the point. The next section of the stripe should start at the top of the first line, with the opening moving toward the rear of the body. To add variety, consider inverting the design so that the point of the sweep ends in the opposite direction. The size and shape of the design are totally up to you. A more complex look means that you'll have to do more cutting, so keep that in mind before you get carried away.



Cut it out. Remove the tape from the mat and apply it to the inside of the body. Since the design is now on the inside, the tape that had been applied to the outside left will now be on the inside right and vice versa; use the pencil marks as guides for placement. Burnish the tape edges down, and cut the stripes out using a fresh hobby-knife blade. Apply only enough pressure to cut the tape; you don't want to score the body.



See your shadow. I applied a light coat of Parma's FasKolor FasTint as a "drop shadow" on the inside of the body, just below the lower right side of the tribal-style graphic. The shadow will appear to the left of the graphic when viewed from the outside.

PAINT TRANSFER IMAGES

Day of the Jackal. After weeding out the excess tape, it's time to for a little mural action. I'm using Jackal Hobbies' new Internal Paint Transfers.



The transfers are applied to the body in the same way as you would apply a temporary tattoo; I thought that this flaming snake was particularly appropriate for the Viper (Jr. Hot Snakes —0031). After you've removed the clear protective sheet, burnish the image onto the Lexan. A damp cloth held against the graphic's carrier releases the image from the backing and helps to burnish the graphic into the body contours.

Once the transfers had dried, I added a few wisps of smoke and backed the section with white.



SpongeBob. The body's main color is a complex-looking, textured effect that's applied in the same way as some faux wall finishes. The two-tone blue pattern may look as if it's tough to do, but it's actually very easy and a lot of fun. Squeeze a small pool of Fasescent Blue onto a clean surface (a paper plate or plastic parts tub works great for this). Dab the paint with a crumpled piece of a plastic wrap or a small sea sponge; I used a piece of a plastic bag.

Make a few test blots on a clean surface; this not only gives you a chance to practice the technique, but it also removes excess paint. When the test pattern isn't a solid blob of color, move on to the body and blot! The object is to end up with a random pattern that uniformly covers the open areas on the body.



Back it up. Once the Fasescent Blue paint blots have dried, spray the open sections with FasPearl blue. These two blues contrast nicely, and the result looks similar to the finish on a Pepsi can.



Add your decals and trim the body to fit your chassis. Welcome yourself into the world of more advanced body designs. Incorporating the textures, hand-cut images, shadows and small murals that you learned how to do in this article will add more impact to whatever you paint. Combining them will really kick up your bodies' looks.

Have fun with the techniques and email me your success stories. Now that you have four more tricks up your sleeve for your next body—go paint something!

continued on next page

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BODY SHOP

New in the shop

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Double-Stick Adhesive Pen

You can often find useful body and detailing items in places that you may have never considered. While cruising my local Wal-Mart's grand opening, I discovered this handy little Scotch double-stick tape dispenser. Instead of the thick foam-sandwich-type tape that leaves gaps under deck spoilers and wing side dams, this thing dispenses only what you need—the sticky stuff. The tape roll measures 3/16x315 inches and sells for \$5.49.



FRESH PAINT

Gary Kyes, Team Losi, Chino, CA

This Triple-XS is the handiwork of Team Losi's Gary Kyes. The attractive copper, silver and white paint scheme accents the body lines of Losi's Dodge Stratus well, and I'm sure the design will inspire many lookalikes. Gary masked the 1/2-inch outline and lower portion and then applied candy tangerine paint backed with silver. The white paint was sprayed on, and the silver pinstripe was applied.

Do you have a sharp, uncluttered photo of your best paintwork? Send it in! Explain the types of paint, products and techniques you used to finish it. Be sure to include your full name and address and your email address if you're online. For information about sending electronic images, check out www.caraction.com. Send print or slide photographs to "Body Shop," RC Car Action, 100 East Ridge, Ridgefield, CT 06877, USA.

CONTACT THE BODY SHOP

Send your "Body Shop" questions and comments to Bob Hastings, bobh@airage.com.

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HPI RACING (949) 753-1099; hpiracing.com.

JACKAL HOBBIES (775) 824-0171; jackalhobbies.com.

PARMA PSE (440) 237-8650; parmapse.com.

TEAM LOSI distributed by Horizon Hobby Inc. (800) 338-4639; teamlosi.com; horizonhobby.com.

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THE SUSPENSION ON A TRAXXAS MAXX TRUCK CAN TAKE A GREAT DEAL OF PUNISHMENT, but serious tumbles and the rigors of racing can bend the stock turnbuckles. BeastMaXX offers 3.88mm titanium turnbuckles that have been designed to survive the hardest hits. The pivoting BeastMaXX ends are beautifully machined out of titanium, and their captured design makes it impossible for them to pop off in a crash. Adjustments are very easy with the included wrench (it's titanium, too), and jam nuts on the turnbuckles lock in your settings.

We installed these turnbuckles on our TRX 2.5-powered T-Maxx, and even after we had spent the better part of a lunch hour punishing the test truck, the links held their toe settings and showed no signs of the abuse we had put them through. Should the unexpected occur, BeastMaXX backs up these turnbuckles with a lifetime warranty.

Turnbuckle with titanium ends (narrow/wide); item nos.—200005/200006; \$99.99

Turnbuckle only (narrow/wide)—200001/200003; \$21.99

BeastMaXX (602) 482-3155; beastmaxx.com.



Traxxas SportTraxx tires

THE STOCK CHEVRON TREADS THAT COME ON THE TRAXXAS MAXX TRUCKS ARE GREAT all-purpose tires, but they aren't necessarily the best solution for the softer stuff. The new SportTraxx tires have an aggressive stud pattern with a directional, chiseled shape and are the first upgrade sneakers offered from Traxxas. They're designed to provide maximum traction in the rear and optimum steering in the front. A large, embossed arrow on the sidewall indicates the correct mounting orientation on the rim.

During testing, the tires performed well on our sandy local track, and when the skies opened up, they had a marked traction advantage on the loose and damp track surface. The tires include soft-shaped foams and will fit any of the current Maxx truck rims.

Traxxas SportTraxx Tires—item no. 3970r; \$29/pair

Traxxas Corp. (888) 872-9972; traxxas.com.



Trinity Team Kinwald Carbon Tech tool sets

TRINITY'S TEAM KINWALD CARBON TECH TOOLS SET A NEW STANDARD on the bench-racing coolness scale because of their aluminum/woven-carbon-fiber handles (complete with the Dirtinator's signature) and embroidered black carrying cases that scream "factory driver."

The Kinwald tool line includes four-wrench metric and SAE hex-driver and nut-driver sets plus a flat-head carb-tuning screwdriver and a 5mm pivot-ball retainer driver, which are sold individually. The carbon-fiber handles vary in diameter to suit a tool's size (larger tips have larger handles). An aluminum base holds the tip; this base is where your fingers land when you hold the wrench, so Trinity placed knurled aluminum there to allow a better grip. It's a good combo: the slick handles turn comfortably in your palm, but your fingers won't slide thanks to the knurled base. So far, the Carbon Tech tools' drill-blank hex tips and hard-anodized nut-driver sockets are wearing well. When the hex tips eventually do wear out, they can be replaced. The nut driver and pivot-ball wrench tips are not replaceable.

Between wrenching sessions, the tools are kept safe in their zippered cases, which have pockets to hold eight tools even though there are only four per set. Each case has the same Brian Kinwald signature logo for the full factory look and is ruggedly constructed of heavy nylon fabric. The Carbon Tech tools are first-class in fit, finish and presentation, but there is a downside: they'll cost you. You could spend much less to get tools that function as well as these, but they won't stop traffic in the pits like the Carbon Techs will.



Inch wrench set (0.050, 1/16, 5/64, 3/32 inch)—item no. TK4000; \$85

Metric wrench set (1.5, 2, 2.5, 3mm)—TK4001; \$85

Inch nut-driver set (3/16, 1/4, 11/32, 3/8 inch)—TK4002; \$118.50

Metric nut-driver set (5, 5.5, 7, 8mm)—TK4003; \$118.50

Pivot-ball driver—TK4004; \$21.99

Carb-tuning screwdriver—TK4005; \$21.99

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North Cullman Raceway, Cullman, Alabama 35055; Daniel Lories, 256-775-2491; email: cullmanrchoobbies@yahoo.com; web: www.cullmanrchoobbies.homestead.com

Oak Min R/C Raceway, Columbiana, Alabama 35051; Matthew Gordon, (205)669-6837; email: oakminraceway@hotmail.com

R/C Hi-Tech Raceway, Huntsville, Alabama 35811; Rick Chambers, 256-539-1347

Spring Cove International Speedway, Florence, Alabama 256-757-1562; email: rvines@hiway.net; web: www.springcovespeedway.com/SpringCove.htm

ARIZONA

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ARKANSAS

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Castle Hobbies, San Jose, California 95124, (408) 377-3771

CCRC, California City, California 93505; Josh Geiger, (760)373-2537; email: gorace@ccrc.com

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Extreme RPM Hobbies, Grand Terrace, California 92313; Bobby Haney, 909-370-3379; email: Extremerrpmracing@aol.com; web: www.Extremerrpmracing.com

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Hot Rod Hobbies, Saugus, California 91350; Jimmy Babcock, (661) 255-2404

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Pure Adrenaline RC & Hobby, Sonoma, California 95370; Matt, (209) 536-6232; email: contact@pahobby.com; web: www.pahobby.com

Racer's Haven Raceway, Bakersfield, California 93309; Greg Cooper, 661-835-0441; web: www.racers-haven.com

Rescue Mini R/C Speedway, Rescue, California 95672; Bruce Pease, (530) 621-3948; web: www.innercite.com/~rccracing/

Ripon R/C Speedway, Ripon, California 95366; Dan Tanis, (209) 599-5160

Sacramento RC Racing & Hobbies, Sacramento, California 95824; Andreas Muller, (916) 424-4001; email: andreas123@earthlink.net; web: www.77sunset.com

Showtime R/C Speedway, Bakersfield, California 93301; Don Risner, 661-328-1481; email: showtimespeedway@aol.com; web: www.showtime-speedway.com

So Cal R/C Raceway, Huntington Beach, California 92646; Jim or Lana, 714-963-7484; email: info@socalrc.com; web: www.socalrc.com

SpeedWorld Raceway, Roseville, California 95678; Billy Bowerman, 916-783-8864; email: speeddog@mindsync.com; web: speedworldraceway.com

The Dirt Valley R/C Racepark, Hemet, California 92344; Joe Christenson, (909) 925-7592

Ventura RoadRunners, Camarillo, California 93010; Big Al, 805-564-4144; email: dudebigal@aol.com; web: www.venturaroadracers.com

COLORADO

MHOR R/C Raceway, Aurora, Colorado 80011; Jess A. Brockman, (303)343-0151; email: questions@mhorr.com; web: www.mhorr.com

Valley West Off-Road RC Club, Grand Junction, Colorado 81504; Jodie Grein, 970-242-1412; email: geerhed@gj.net; web: www.gj.net/~geerhed/vwvrcind.html

CONNECTICUT

K&N R/C Speedway Inc., Stafford Springs, Connecticut 06076; Jim or Bill, (860) 684-9896

Manchester Hobbies, Manchester, Connecticut 06040; Jim or Mike Tierini, (860) 643-4768

R/C Madness, Enfield, Connecticut 06082; Christopher Marcy, (860) 741-6501; email: cmarcy@rcmadness.com; web: www.rcmadness.com

Xtreme Radio Control, New Milford, Connecticut 06776; Paul or Pete, (860) 354-4703

DELAWARE

ESRC, Seaford, Delaware 19973; Bill Auchterlonie, 302-734-2757/302-629-3944; email: aeromarine@erols.com

FLORIDA

B&T RC Central, Fort Walton Beach, Florida 32547; Mike or Tim, 850-863-1666

Daytona R/C Racing Assoc., Ormond Bch., Florida 32174; Bill Flaherty, 386-676-9001; email: bjl@bestnetpc.com; web: daytona-rc.homeip.net

Farmers Hobby Shop & Raceway, Tampa, Florida 33619; Greg Cardone, 813-248-3314; web: www.farmershobby.com

First Coast Speedway, Jacksonville, Florida 32211; Bobby Phillips, 904-716-0861; web: www.firstcoastautoracing.com

G&C Hobby Raceway, Lantana, Florida 33462; George, 561-547-3812; email: gncobbies2@cs.com; web: www.gncobbies.com

GBs Hobbies, Port St. Lucie, Florida 34952; Track Owner, 561-460-2844; email: gaircrt@bellsouth.net

Grand Prix RC-Club, Ft. Pierce, Florida 34945; Luther Peterson, 772-473-2130; email: LWPSPEED@aol.com

Gulf Coast RC Car Club, Naples, Florida 34105; Mark Bentfield, 941-774-7116; email: teammofear@aol.com

Hobby Central, Pensacola, Florida 32504; Bill McLester, 850-471-9800; email: trackinfo@hobbycentralrc.com; web: www.hobbycentralrc.com

Hobby World Raceway, Jacksonville, Florida 32210; Greg, (904) 772-9022

Kissimmee R/C Auto Racing, Kissimmee, Florida 34741; John Rosser, (407) 944-4913; email: john@craftworldflorida.com; web: www.craftworldflorida.com

Monster Hobbies, Deerfield Beach, Florida 33441, (954) 428-9118

Monza R/C Speedway, Miami, Florida, Ed Delgado, (305) 437-9895

Morris Kohl's Raceway and Hobby Shop, Tampa, Florida 33604; Morris Kohl, (813) 931-1626

My Rose Hobbies & Crafts, Jupiter, Florida 33458; Mark Watson, (561) 744-3800

NORRA, Naples, Florida 34104; Rob Dondorfer, 239-417-1099; web: www.norra.mainpage.net

Pro Hobbies Speedway, Apopka, Florida 32712; Jim, (407) 886-4615; email: prohobby@junio.com

Sarasota RC Speedway, University Park, Florida 34201; Jim Wilson, (941) 358-7047

South Palm Beach Racers, Boca Raton, Florida 33486; Mike Fazio, 561-338-5367; email: epine01@bellsouth.net; web: http://communitylink.gopbi.com/group/s/spbrcub

Superior Hobbie R/C Parking Lot Racing, Casselberry, Florida 32707, (407) 834-9299; email: racing@superiorhobbies.com; web: www.superiorhobbies.com

SWF RC Car Club, Fort Myers, Florida 33907; Mike Nardone, 941-278-1295; email: swfrcclub@yahoo.com; web: swfrcclub.tripod.com/swfrcclub

Tallahassee R/C Speedway, Tallahassee, Florida 32301; Roland Costine, 850-671-2814; email: idothtre@hotmail.com; web: www.geocities.com/rcdude1/rccars.htm

Tampa R/C Raceway, Seffner, Florida 33584; Carole Ramond, 813-655-6366; email: carolehobbytown@aol.com

West Coast R/C Club, Lutz, Florida 33549; J.R. Sanyet, President, 813-991-0168

GEORGIA

Augusta R/C Racer's Club, Augusta, Georgia 30909; Darren, 706-860-5608

Dalton Motorsports, Dalton, Georgia 30721; Keith Manton, 706-226-6699; email: dmsos@alotco.net

Hobby Town Raceway, Columbus, Georgia 31909; Frank Bastos, (706) 660-1793; email: fbastos@mindspring.com; web: www.hobbytown.com

Primitime Raceway, Calhoun, Georgia 30701; Tommy Jackson, 706-625-9037; email: primitimehobby@qccinternet.net; web: primitimehobby@qccinternet.net

KEY TO SYMBOLS

	Indoor		Concrete
	Outdoor		Asphalt
	Off-road		Minis & Micros
	On-road		On-site hobby shop
	Oval		AC power
	Dirt oval		Auto lap counting
	Carpet		Food available

SCORE-Phil Hurd Raceway, Pooler, Georgia 31322; Joe Ellisor, 912-748-1988; email: philjup@scorecard.edu; web: www.score-racing.org



The Flight Box Hobby Shop, Rome, Georgia 30161-6826; Leslie Duke, (706)-234-3014



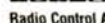
GUAM

Guaian Off-Road Racers Mangilao, Dededo, Guam 96929; Mr. Yoshimura, 671-637-8682; email: thumbtack2@yahoo.com; web: guaianracers.net/firms.com/



HAWAII

A.S.I. Racing, Kapaa Kauai, Hawaii 96746; Arnold Morales, 808-821-8132



Radio Control Assoc./Alaa Park Raceway, Pearl City, Hawaii 96782; Ace R/C Products, (808) 456-1279



Sandy Flemings, Pearl City, Hawaii 96782; Dave Caldwell, 808-456-7272; email: info@formula1-rc.com; web: www.formula1-rc.com



IDAHO

Almosta Ranch R.C.s, Twin Falls, Idaho 83301; Casey Clements, (208) 733-8667; email: james_casey_clements@hotmail.com



Capital Dirtburners, Boise, Idaho 83702; Joe Thompson, 208-466-6334; email: intermarthct@yahoo.com; web: communities.msn.com/capitaldirtburners



DM Raceway, Pocatello, Idaho 83201; Mike Buffalo, 208-233-8163; email: dmraceway20m.com; web: www.dmraceway20m.com



ILLINOIS

AJs Raceway & Hobby, Dekalb, Illinois 60115; AJ, 815-756-2772; web: www.ajsraceway.com



C.I.R.C.A., Jacksonville, Illinois 62650; Sport en' Hobby, (217) 245-1375



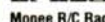
His N Hers Hobbies Raceway, Bloomington, Illinois 61701; Kevin Turek, 309-827-0204; email: hishershobbies@aol.com



HobbyTown USA, Oak Park, Illinois 60301; Mark or Fred, (708) 445-8056; email: htuop1@aol.com



Machesney Park Raceway, Machesney Park, Illinois 61115; Gina, (815) 282-1311; email: mpr30@aol.com; web: www.mpr30.homestead.com



Monie R/C Raceway, Monie, Illinois 60449; Roy or Roberta Moody, (708) 534-2422 (track), (708) 799-5597 (office)



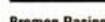
Primetime Hobbies, Tremont, Illinois 61568; Don Davis, 309-925-9999; email: staff@primetimehobbies.com; web: www.primetimehobbies.com



Radio-Active Raceway, Bolingbrook, Illinois 60440; Jim, (630) 759-7557; email: RCVollar@aol.com



Venture Raceways, Libertyville, Illinois 60048, (847) 549-6963



INDIANA

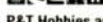
Bremen Racing Ent., Bremen, Indiana 46506; Dale Heuberger, 219-546-3807



Duneland Hobbies & Raceway, Portage, Indiana 46368; Ron, 219-763-1610; email: RTrobaugh1@gmail.com; web: www.dunelandhobbies.com



Hobby Barn Raceway, Terre Haute, Indiana 47802-9694, (812) 299-5773



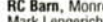
P&T Hobbies and Raceway, Mitchell, Indiana 47446; Paul Weber or Tom Logsdon, (812) 849-6666; email: pnhobby@quest.net; web: www.pnhobby.com



Pete Russell's R/C Speedway, Elkhart, Indiana 46516; Pete Russell, 574-293-1827



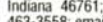
R/C World of Indiana, Lynn, Indiana 47355; Joe Kolp, (765) 874-2464; email: rcworld@rcworld.com; web: www.RCWORLD.com



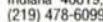
RC Barn, Monroe, Indiana 46772; Mark Lengrich, (219) 692-6600; email: bigdaddy@adamswells.com; web: www.rcbarn.com



RCRCR Raceway, Boonville, Indiana 47601; Scott Payton, 812-477-9661; email: spdracer@speedex.net; web: www.rcrcr.com



Schoolyard RC Speedway, Lagrange, Indiana 46761; David W. Bryan, 260-463-3558; email: dwbryan@iocl.net; web: www.rcspeedway.net

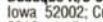


Shoetime Lot Racing, Fort Wayne, Indiana 46819; Mike Romines, (219) 478-6099; web: fortwaynecr-park.tripod.com/

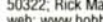


IOWA

Ames Radio Control Speed Assoc., Ames, Iowa 50014; Ryan Davis/Brad Scandrett, 515-231-3813/515-432-0467; email: Davismotors@aol.com



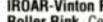
Dubuque R/C Speedway, Dubuque, Iowa 52002; Craig Schmal, 563-587-0218; email: rcraig7@aol.com; web: www.geocities.com/dbqrc



Hobby Haven, Des Moines, Iowa 50322; Rick Marble, (515) 276-8785; web: www.hobbyhaven.com



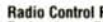
Independence, Independence, Iowa 50644; Eugene Bachman, 319-266-3857; email: BachmanE2@hotmail.com



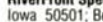
Iowa City R/C Racing Association, Iowa City, Iowa 52240; Hobby Corner, (319) 338-1788



IROAR-Vinton Raceway @ Vinton Roller Rink, Cedar Rapids, Iowa 52402; Ed Karr, 319-362-1291; email: boxkarhobby@aol.com



Manly R/C Club, Manly, Iowa 50456; Bruce Hill, (641) 454-2025



Marble's Raceway, Des Moines, Iowa 50317; Rick Marble, (515) 262-7507



Radio Control Raceway Park, Fort Dodge, Iowa 50501; Bernie Halverson, 515-576-3780 (515-571-1717 Race Day); email: bhalverson@dodgenet.com



RiverFront Speedway, Fort Dodge, Iowa 50501; Bernie Halverson, 515-576-3780 (515-571-1717 Race Day); email: bhalverson@dodgenet.com



Wild Bill's Raceway, Knoxville, Iowa 50138; William Anderson, Jr., 641-842-5973; email: wildbilz@iowatelecom.net; web: www.wildbillsracing.com



KANSAS

Air Capital Hobbies Raceway, Wichita, Kansas 67212, (316) 721-4164



D&B Raceway, Menlo, Kansas; Ron Ball, (785) 855-2370

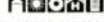


KENTUCKY

Coyote Raceway, Lexington, Kentucky 40505; Danny P., 859-253-9900 or 859-253-9330; email: hyperbola01@earthlink.net; web: www.coyotehobbies.com



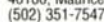
Dixon's R/C Raceway, Hazard, Kentucky 41701; Jeff Dixon, (606) 436-4820; email: jeffdr1@hotmail.com



Mayking R/C Speedway, Mayking, Kentucky 41837; Jon Fields, 606-633-4700; email: jon1@se-tel.com



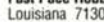
Pit Stop Hobbies, Paducah, Kentucky 42003; Robert or Rodney, 270-443-0052; email: pitstop1@aepex.net



Trio Hobbies & R/C, Radcliff, Kentucky 40160; Maurice Johnson, (502) 351-7547



Wildcat Speedway, Nicholasville, Kentucky; David Bowles, 859-272-0231



LOUISIANA

Fast Pace Hobbies, Alexandria, Louisiana 71301; Joseph or Casey Toralba, 318-561-2070; email: fastpacehobbies@aol.com



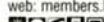
Gator R/C Raceway, Moss Bluff, Louisiana 70612; Tony Diaz, 337-855-3206; email: keithsjac@aol.com; web: homepage.mac.com/kmaples/



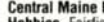
Hwy. 44 Hobby Shop, Gonzales, Louisiana 70737; Eric Olmstead, (225) 644-1773; email: eric209@aol.com



Red Stick R/C Raceway, Baton Rouge, Louisiana 70814; Michael Pino, 225-218-1002; email: redstickraceway.com; web: www.redstickraceway.com

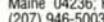


St. Charles RC Speedway, Destrehan, Louisiana 70047; Al Cazalot, (504)764-0625; email: stcharlesracer@home.com; web: members.home.net/stcharlesracer



MAINE

Central Maine R/C Speedway & Hobbies, Fairfield, Maine 04963; David Prescott, (207) 453-4588; email: rcracer@mint.net



Clay Bowl R/C Hobbies, Greene, Maine 04236; Pat Cap, (207) 946-5003



MARYLAND

Coles Race Way, Waldorf, Maryland 20602; Cole Brinfield, (301)-843-1386; email: kbrinfield@cs.com



GPA Hobbies, Crofton, Maryland 21114, 301-858-0004



The Track, Gaithersburg, Maryland 20877; Mimi Wong, (301) 417-9630; email: mimithetrack@yahoo.com; web: www.rctrack.com



MASSACHUSETTS

Big Boys Toys, Fall River, Massachusetts 02723; Track Owner, 508-677-9400



East Templeton Model Raceway, Templeton, Massachusetts 01468; Keith Anderson, 1-978-632-1619; email: keith@glowplug.com; web: glowplug.com



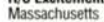
Hi-Tech Hobbies, Raynham, Massachusetts; Ruben, (508) 880-5373



Megadrome Raceway, North Adams, Massachusetts 01247; Bob Blanchette, 413-743-7223



Northboro Speedway, Northboro, Massachusetts 01532; Bob Trimble, 508-393-8087 or 393-2691



R/C Excitement, Inc., Worcester, Massachusetts 01605; Todd Anderson, 508-753-8676; email: rcexcitement@aol.com; web: www.rcexcitement.com



RPM RC Raceway, Abington, Massachusetts 02351-1094; Richard Tonetti, (781) 857-2300; email: hobtown@aol.com; web: www.rpmhobbys.com

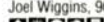


MICHIGAN

Backyard R/C Raceway, Brown City, Michigan 48416; Tom Jones, (810)793-0257; email: JONES_TNT_2000@YAHOO.COM



D.R. R/C, Taylor, Michigan 48180; Bobby or Fred, (734) 287-7405; web: www.downrivracing.8k.com



E.U.P., Kincheloe, Michigan 49788; Joel Wiggins, 906-495-3503



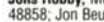
Fastraxx, Brownstown, Michigan 48173; Greg Yingling, (734) 379-8980; email: fast3@hotmail.com



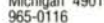
Freedom Hill R/C Raceway, Sterling Heights, Michigan 48312; Jim McKenna, (810)268-3996



Great Lakes Racers Club, Grand Rapids, Michigan 49585; John Warner, 616-838-2231; email: Gr8LksRacers@aol.com; web: www.rogers3.com/glr/



Hideaway Raceway, Napoleon, Michigan 49201; David Carlisle, 1-517-536-8821; email: adcarlisle1@netscape.net



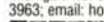
Jons Hobby, Mt. Pleasant, Michigan 48858; Jon Beutler, (517)773-5412; email: jonshobby@earthlink.net; web: www.jonshobby.com



JT Superspeedway, Battle Creek, Michigan 49015; Jerry or Sam, 616-965-0116



Larry's Performance R/Cs, Commerce, Michigan 48390; Jess or Oppie, 248-926-1140; email: lprrcs@qwest.net



Larry's Performance RC Carpet Track, Sterling Heights, Michigan 48314; Larry, 586-997-4840; email: lprrcs@qwest.net



N.M.R.C.C. Speedway, Gaylord, Michigan 49735; Gabe, (989) 732-3963; email: hobby-toy@voyager.net



R&L Hobbies & Racing, Portage, Michigan 49002; Rex Simpson, (616) 323-3686; web: www.rlhobbies.com

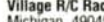


R.A.C.E. Inc., Jackson, Michigan 49203; Sam Sprang, (517) 787-9161

Raw Roots Race Tracks, West Olive, Michigan 49460; Roy Bennis, (616) 399-9338



Village Hobbies, Hesperia, Michigan 49421; John Foscick, 231-854-1374; email: vhracing@triton.net



Village R/C Raceway, Decatur, Michigan 49045; Chuck Nolke, (616) 423-7878



MINNESOTA

Bruce McCullough Memorial R/C Speedway, Cloquet, Minnesota 55720; Howie Port, (218) 879-5174; email: howies_house@hotmail.com



Country R/C Raceway Park, Belview, Minnesota 56214-8115; Charles L. Steff, 507-641-8115



J's Radio Control Race Park, Starbuck, Minnesota 56381; Jay Campbell, (320) 239-4827



Kevin's Off-Road Raceway, Crookston, Minnesota 56716-2317; Kevin Altepete, (218) 281-7523; email: kevin@krcrproducts.com; web: www.krcrproducts.com

Real Blue Vue R/C, Kansas City, Missouri 64133; Steve Hale, (816) 358-0238; email: hrealrc@aol.com; web: www.geocities.com/real_rc_raceway



Real R/C Raceway, Pleasant Hill, Missouri 64080; Steve Hale, (816) 540-5584; email: hrealrc@aol.com; web: www.real-rc.com



Showtime Speedway, Bakerfield, Missouri, Don Risner, (601) 203-1481



MONTANA

Garden City R/C Speedway, Missoula, Montana 59801; Brian Culp, (406) 549-7992; email: gardencityrc@msn.com



Magic City Racers, Billings, Montana 59102; Bryan Grummett, 406-656-8266; email: jsaves@grsolution.net; web: www.magiccityrc.com



RC Offroad Association of Racing (ROAR), Libby, Montana 59923; Jamie, 406-293-6506; email: shark-boyet@hotmail.com



NEBRASKA

Hadar R/C Raceway, Norfolk, Nebraska 68701; John Schoenauer, (402) 644-7922



Hobby Town Raceway, Lincoln, Nebraska 68505; Chris or Chad, 402-434-5056; email: eaststore@aol.com



Hobby Town USA Raceway Park, Lincoln, Nebraska 68508; Chad or Chris, 402-434-5056; email: east-store@aol.com



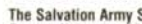
NESCAR Raceway, Grand Island, Nebraska 68801; Steve Blayney, 308-382-0920; email: spinkig@nebi.com



O.N.R.O.A.D., Omaha, Nebraska 68104; CoRK Jacobs, (402) 556-8674



OTWG Carpet Raceway, Norfolk, Nebraska 68701; John Schoenauer, (402) 644-7922



The Salvation Army Speedway, Omaha, Nebraska 68164, 402-734-3414

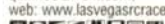


NEVADA

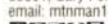
Dansey's Indoor R/C & Hobbies, Las Vegas, Nevada; David Lugo, (702) 453-RACE or (888) 675-8963; web: www.danseys.com



Las Vegas R/C Raceway, Las Vegas, Nevada 89139; Patrick Quinn, 702-365-1396; email: patrick-quinn98@lvcvm.com; web: www.lasvegasrcraceway.com



T-Rix bikes & R-C shop, Elko, Nevada 89801; Gary Perkins, (775) 777-8804; email: mtnman14k@hotmail.com



NEW HAMPSHIRE

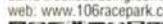
Hilltop RC, Troy, New Hampshire 03465; Pete Bastoni/Jim MacPherson, 603-242-3222; email: hilltoprc@netze-ro.net; web: hilltoprc.homestead.com



Lakes Region R/C Speedway, Giltford, New Hampshire 03246; Louie Blais, 603-524-2909; email: lakeregionrc@hotmail.com; web: www.lakesregionrc.com



RT 106 Racepark, Pembroke, New Hampshire 03275; David Daniels, 603-224-7223; email: david@collecltracing.com; web: www.106racepark.com



NEW JERSEY

America's Hobby Center Inc., North Bergen, New Jersey 07047; John Many, (201) 662-0777; web: www.ahc1931.com



Back Track Raceway, Hammonton, New Jersey 08037; Bob W., 609-214-5016



Checkerboard Raceways, Elwood, New Jersey 08217; Ray Murray, 856-629-9413; email: RaysTrack@webtv.net



Family Hobbies Raceway, Vineland, New Jersey 08360; Linda Vogel, 856-696-5790; email: familyhobbies@yahoo.com; web: familyhobbies.20m.com



Jackson RC Club, Jackson, New Jersey 08527; Al Sardano, 732-364-6422; email: Tazzyd@optonline.net; web: www.jacksonRC.com



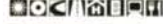
Jefferson Speedway, Oak Ridge, New Jersey 07438; Jim, (973) 697-7525



Millville R/C Oval & Roadcourse, Millville, New Jersey 08332; William Denstoz, 856-327-4640



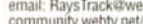
On Trax Hobbies, Browns Mills, New Jersey 08015; Joseph DiGirolamo, (609) 735-0422



Pottbellys R/C Speedway, Pitts Grove, New Jersey 08360; Drew Anastasio, 856-875-2132; email: pottbellys@pottbellysrc.com; web: www.pottbellysrc.com



South Jersey Cost Controlled Racing, Sicklerville, New Jersey 08081; Ray Murray, 856-629-9413; email: RaysTrack@webtv.net; web: communitywebtv.net/RaysTrack/South JerseyCost



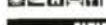
SpeedPro Dragway, Elizabeth, New Jersey 07206; Albie Niziolek, 908-351-5080; email: funnycar176@aol.com; web: www.speedpro.org



The Race Place, Farmingdale, New Jersey 07731; John Fary, (908) 938-5215



Wacky RC Raceway, Roselle, New Jersey 07203; Tony Williams or Kimble Wright, (908) 241-6700



NEW MEXICO

Albuquerque R/C Off-Road Raceway, Albuquerque, New Mexico 87120; Bill Mitchell, (505) 243-0681 (W); 898-6181 (H); email: email-bill@home.com

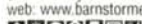


Speed Zone, Clovis, New Mexico 88101; Brad Ferguson, 505 769 1737; email: speedzone@yucca.net



NEW YORK

BarnStormers Raceway, Chester, New York 10918; Lou Sysma, 845-469-BARN(2276); email: iamsysma@hotmail.com; web: www.barnstormers.0catch.com/



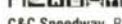
Brennan's RC Hobbies, Vernon, New York; Bill or Tom Brennan, (315) 829-4930



Brooklyn Hobbies, Brooklyn, New York 11234; Chris Palermo, 718-951-2500; email: brooklynhobbies@aol.com; web: www.brooklynhobbies.com



Bruckner Racing, Bronx, New York 10465; Thomas Baffers Sr., (800)-288-8185



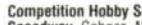
C&C Speedway, Binghamton, New York 13903; Eric Boyd, (607) 773-2044



Capital District Radio Controlled Stock Car Club, Loudonville, New York 12211; Peter Willis, (518) 482-7128; email: rcpete12211@yahoo.com; web: cdrcsc.homestead.com



Chippmunk Hill R/C Speedway, Theresa, New York 13691; Ted or Pete House, (315) 628-5065



Competition Hobby Supplies & Speedway, Cohoes, New York 12047; Howie Cummings, 518-786-3622; email: howard.cummings@verizon.net; web: www.competitionhobbysupplies.com



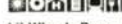
East Coast R/C Hobbies, Brooklyn, New York 11204; John Giangrande, 718-627-3814



Fastraks, Hogsburg, New York 13655; Mark Castonguay, (518) 358-3686; email: troghob@northnet.org; web: www.fastraks.8m.com



Hobby Zone Raceway, Ozone Park, New York 11417; Brian, Sean or Adam, (718) 641-9001; email: moonchaserwolf@aol.com



Lil Wheels Raceway, Oswego, New York 13126; Bill Meyer, 343-6566; email: lilwheelsraceway@hotmail.com; web: lilwheelsraceway.tsx.org



Long Island Raceway, Farmingdale, New York 11735; James, (516) 845-7223; web: www.raceway.com



MTW Raceway, Gato, New York 13033; Tim, 888-39-HOBBY; 315-626-2029; email: docsavage@mtwraceway.com; web: www.mtwraceway.com



PRO Speedway, Cattaraugus, New York 14719; Marc Pritchard, (716) 257-3101



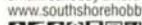
Radio Hill Raceway, Dundee, New York 14837; Bill or Greg, 607-243-8641 (Bill); 607-243-7899 (Greg)



Rampage R/C & Hobbies, Hyde Park, New York 12538; Brian Walker, (845) 229-1379



South Shore Hobby & Raceway, Coram, New York 11727; Benny or Bonnie, 631-696-8500; email: sshobby@northeast.net; web: www.southshorehobby.com



Southern Tier Raceway, Owego, New York 13827; Anita Harding, (607) 687-5395



TARMAC Ultimate R/C Raceways, Poughkeepsie, New York 12603; Todd Plass, 845-342-5409 (Todd); 845-454-8276 (Track-Sundays); email: toddp@tarmacraceway.com; web: www.tarmacraceway.com



Walt's Hobby, Syracuse, New York 13209; Bruce, 315-453-2291; web: www.walts-hobby.com



Willis Hobbies R/C Speedway, Mineola, New York 11501; Ken Ford, 516-746-3944; web: www.willishobbies.com



NORTH CAROLINA

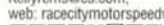
Chatham R/C Raceway, Bear Creek, North Carolina 27207; Dwight Fields, (919) 898-4518; email: chatham_rc_speedway@yahoo.com; web: www.chathamrcspeedway.com



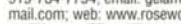
R.C.R. Speedway, Salisbury, North Carolina 28147; Ronnie Linker, (704) 637-2565



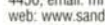
Race City Motor Speedway, Mooresville, North Carolina 28115; Ray Kelly, 704-660-FAST; email: Kellyrcmcs.com; web: racecitymotorspeedway.com



Rosewood RC Speedway, Goldsboro, North Carolina 27530; Glenn Elam, 919-734-7754; email: elam49@hotmail.com; web: www.rosewoodrc.com



Sandhills Raceway, Southern Pines, North Carolina; Mike Russel, 910-245-4450; email: mrmrc@mindspring.com; web: www.sandhillsraceway.com



Southern RC Motorsports Club, Shallotte, North Carolina 28459; Eddie Ferster, (910) 754-8528

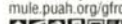


The Antique Barn, Wilson, North Carolina 27893; Steve, (252) 237-6778; email: antiquebarn@esn.net



NORTH DAKOTA

Grand Forks Remote Control Racers, Grand Forks, North Dakota 58201; Dan Miller, 701-746-9910; email: dandmiller@juno.com; web: mule.puah.org/gfrcr

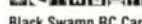


OHIO

AK Hobby & Raceway, Cincinnati, Ohio 45211; Tim Tolle, (513) 661-7080; email: tim@akhobby.com; web: www.akhobby.com



American Ohio Sprint Car, Wickliffe, Ohio 44092; Gary Waldheim, 440-944-9966; web: www.aosca.8m.com



Black Swamp RC Car Club, Toledo, Ohio 43623; Riders Hobbies, 419-843-2931; email: ridersclub@webtv.net; web: www.blackswamprc.cjb.net



CORCAR/Sams Club, Galloway, Ohio 43119-8732; Bill Stevenson, (614) 870-7159



D&J R/C Raceway, Orrville, Ohio 44667; Don, (330) 682-4266



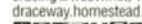
DeFosse Raceway, Ripley, Ohio; Greg DeFosse, (937) 377-2063



Extreme RC Raceway, Wheelersburg, Ohio; Kevin Rowe, (740) 574-4190; email: extremerc2000@yahoo.com; web: www.ohiorc.com



Hobbyland Raceway, Proctorville, Ohio 45669; Craig Harber, 740-886-0502 or 740-8868662; email: pitrow-eracing@webtv.net; web: hobbyland-raceway.homestead.com



Medina R/C Raceway, Medina, Ohio 44256; Mr. Bill, 330-723-0255; email: mr.bill@nls.net



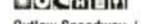
Mid Ohio Dirt Oval, Lexington, Ohio 44904; D&D Hobby Center, (419) 884-0001



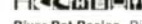
Nothing But Air R.C. Track, Logan, Ohio 43138; Gary Lloyd, 740-385-0288



Ohio Valley OffRoad R/C Raceway, Jerusalem, Ohio 43747; Kevin Wilson, (740) 926-1738; email: consol@1st.net; web: www.ovor.8m.com



Outlaw Speedway, Lexington, Ohio; (919) 898-4518; email: kramerc@aol.com; web: rcdriftval.freeservers.com



River Rat Racing, Ripley, Ohio 45167; Jon Faris, 937-392-9298; email: honey3@bright.net; web: www.riverratraceway (under construction)



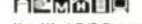
T.S.R.C.A.R., Hamilton, Ohio 45011; Dennis Young, (513) 367-5634; email: scaleracr@aol.com; web: www.tn-stateracraforacers.com



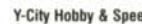
TARCAR, Toledo, Ohio 43617; Bill Bridges, (419) 826-3859



Ultra Racing R/C Hobby and Track, Hamilton, Ohio 45015; Ed Lewis, 513-863-7342; email: UltraRacing@aol.com; web: www.rccaronline.com



Van Wert R/C Raceway, Van Wert, Ohio 45891; Mark Davis, (419) 232-2112



Y-City Hobby & Speedway, Zanesville, Ohio 43701; Kevin McKenna, (740) 455-3025; email: Kevin@ycity-hobby.com; web: www.ycityhobby.com



OKLAHOMA

Action Hobbies, Tulsa, Oklahoma 74145; David Cole, (918) 663-8998; email: actionhobby@aol.com



Action RC Speedway, Oklahoma City, Oklahoma 73135; Jerry Hawthorne, (405) 670-7770; email: ginnat@flash.net; web: www.actionrc.com



Adams Creek R/C Speedway, Broken Arrow, Oklahoma 74014; John Beighle, (918) 355-1416



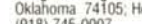
Competition R/C, Oklahoma City, Oklahoma 73149; James or Louise Brown, (405) 634-0809; email: compcr1@aol.com



Enid R/C Speedway, Enid, Oklahoma 73703; Darin Pendleton, (580) 554-9400; email: darin@enid.com; web: www.enidrcracing.com



HobbyTown USA, Norman, Oklahoma 73072; Todd Jensen, (405) 292-5850



Wings N Things Raceway, Tulsa, Oklahoma 74105; Heath Anderson, (918) 745-0007



KEY TO SYMBOLS

- | | | | |
|--|----------|--|--------------------|
| | Indoor | | Concrete |
| | Outdoor | | Asphalt |
| | Off-road | | Minis & Micros |
| | On-road | | On-site hobby shop |
| | Oval | | AC |

OREGON

Competition Racing Association, Portland, Oregon 97230; Mark Taylor, (503) 761-1334; email: crajodir@west.net or cra-mark@west.net; web: home.attbi.com/~cra/

Dirt City RC, Albany, Oregon 97321; Doug Vertrees, (541) 791-1089; email: quicktemperrc@aol.com

R/C Plus Hobbies Raceway, Salem, Oregon 97302; Ron Smith, (503) 364-9188; email: rcplus@rcplus.com; web: www.rcplus.com

R/C Speed Center, Medford, Oregon 97501; Gene & Betty Jean Skelton, 541-779-8298

Rose City Scale Racing, Milwaukie, Oregon 97222; Rick Strauss, (503) 631-2929; web: www.rc-cars.com

PENNSYLVANIA

Bumps & Jumps RC Speedway, Middletown, Pennsylvania 17057; Chris McKinney, 717-728-4613; email: chrismc@bigfoot.com; web: www.bumpsandjumpsrsc.com/

Courtview Raceway, Washington, Pennsylvania 15301; Aaron Stimmell Jr., 724-228-8396

DC Ultra Trax, Warminster, Pennsylvania 18974; David Cowan, (215) 672-5200; web: www.jrchobbies.com

Dreamboat Hobbies, Warren, Pennsylvania 16365; Louie Dussia, (814) 723-8052; email: dreamboat77@yahoo.com

J&K Hobbies and Raceway, Jersey Shore, Pennsylvania 17740; Jason Corter or Kevin Casbeer, 570-398-8171; email: rcmaniac01@msn.com

Kranzel's R/C Raceway & Hobbies, Lemoyne, Pennsylvania 17043; David or Stuart Kranzel, (717) 737-7223; web: www.kranzelsrchoobbies.com

Little Plum R/C Hobbies, Lock Haven, Pennsylvania 17445; Larry Duck, (570) 769-1984

Marshall's R/C Raceway, Honesdale, Pennsylvania 18431; Bill or Dot Marshall, (570) 729-7458

McCullough's Offroad, Sarver, Pennsylvania 16055; Doug McCullough, (724) 352-0116; email: DMcCull323@aol.com

Newville RC Speedway & Hobbies, Newville, Pennsylvania 17241; Randy or Mike, 717-776-5568; email: newvillerspeedway@yahoo.com; web: www.newvillerspeedway.com

Pit Stop Hobbies, Mount Joy, Pennsylvania 17552, (717) 653-6222; email: pitstophobbies@pitstophobbies.net; web: www.pitstophobbies.net

Racers Edge R/C Racing & Hobbies, Smethport, Pennsylvania 16749; Rick Morgan or Johna Simar, (814) 887-9256; email: racersedge@mindspring.com; web: www.racersedge.com

RB Motorsports & Hobby, Northumberland, Pennsylvania 17857; Rick Bunting, (570) 473-8711

RC Avenue II, Bradenville, Pennsylvania 15650; Chris Demyan, 724-537-9592; email: 12ss@msn.com

RC Dirtburners Club, Windber, Pennsylvania 15963; Bruce Schmidt, (814) 266-4118; email: rckidd1@cs.com

RC Outfitters RCO Raceway, Hanover, Pennsylvania 17331; Chris Shaffer, (717) 633-9490; web: www.rcohobbies.com

Riverside Raceway, Warren, Pennsylvania 16365; Jeff, (814) 723-4211

Staub Bros. R/C Speedway, Gettysburg, Pennsylvania 17325; Todd or Scott Staub, 717-334-8488; web: www.staubbrothers.com

The Hobby Depot, Malvern, Pennsylvania 19320; Chris McGovern, 610-725-8317

The Raceway at River Junction, Beaver, Pennsylvania 15009; Sam or John, (724) 728-5571; email: riverjct@stargate.net

Thunder Hobbies Raceway, Indiana, Pennsylvania 15701; Brent or Lori Marshall, (724)349-2639; email: thunderhobbies@hotmail.com

Track 84, Narran, Pennsylvania 17555; Andrew Flexer, (717) 354-6503

Trains & Lanes Raceway, Easton, Pennsylvania 18045; Jeff Setzer, (610) 253-8850 or (800) 447-4891; email: trainlanes@aol.com

TRP, Kingston, Pennsylvania 18704; Rob Yeager, 570-283-3066; email: rcrob99@aol.com

WillCam Raceway, Punxsutawney, Pennsylvania 15767; James Campbell, (814) 939-4251

PUERTO RICO

Bayamon R/C Park, Bayamon, Puerto Rico 00956; Damian Cruz & Javier Rivera, (787) 869-8092 & 401-2770; email: damian@bayamonrcpark.com; web: www.bayamonrcpark.com

Hacienda Muñoz R/C Track, Juana Diaz, Puerto Rico 00795, (809) 837-7083

Hi-Speed C Raceways, San Juan, Puerto Rico 00926; Carlos Ortiz, (787) 283-0198; email: hispeed@hotmail.com; web: www.hispeedhobby.com

Mech Tech Touring Park, Caguas, Puerto Rico 00725; Humbert (Tito) Lizardi, (787) 739-1572; email: tlizardi@hotmail.com

Tropical Raceway Track, Manati, Puerto Rico 00674; Hector Pabon/George Pabon, (787)854-8884 or (787)884-9294; email: trophob@coqui.net

RHODE ISLAND

Insane Toys RC race track, Providence, Rhode Island 02909; Jose Jimenez, (401) 421-8878; email: Havokt@aol.com; web: members.home.net/havokt/

SK Hobbies Inc., Johnston, Rhode Island 02919; Slim or Keith, (401) 453-1440

SOUTH CAROLINA

Atomic Racers, Aiken, South Carolina 29803; Bill Jackson, 706-855-0846 or 803-725-1664

Carolina R/C Speedway, Easley, South Carolina 29640; David, 864-295-1209; email: cprahirc@mindspring.com; web: www.carolinarc.com

D&S Hobbies R/C Track, Hartsville, South Carolina 29550; Don Dietz, 843-383-0017; email: dshobbydon@aol.com; web: www.dshobbies.com

Darlington R/C Raceway at Hobbies & More, Darlington, South Carolina 29532; Jerry Pollard, (843) 393-0355; web: www.hobbiesmore.com

Hi Voltage Raceway, Anderson, South Carolina 29625; Whitner Bowen, 1-864-225-8680; email: Jahlon247@aol.com

The Grove Racing Center, Rockhill, South Carolina 29730; Don Faris, (803) 327-4121; web: www.hobbystop.com

SOUTH DAKOTA

Action R/C Raceway, Mitchell, South Dakota 57301; Royal or Roger, Royalday-605-996-9871; Roger-eve-605-996-2897; email: pioneer@santel.net

Boomerangs Raceway, Hartford, South Dakota 57033; Ed Smithback, (605) 528-7345

Dakota Off-Road Racers, Aberdeen, South Dakota 57401; Kevin, 605-225-5223

Grassland Racers, Black Hawk, South Dakota 57718; Ryan Logan, (605) 787-5632

SBK, Winner, South Dakota 57580; Broc Stout, (605) 842-2699

TENNESSEE

Hobby Town USA, Franklin, Tennessee 37067; Bobby Mills, (615) 771-7441; email: htu126@aol.com

MSA R/C Racing, Crossville, Tennessee 38555; D.R. Findley, (931) 456-0027

Need For Speed Raceway R/C, Chattanooga, Tennessee 37415; Ronnie Cox, (423) 876-9019

RC Speedway, Cleveland, Tennessee 37323; James Morgan, 423-472-7854 or 645-5771; email: jmorga59@bell-south.net

Robertson's R/C Raceway, Jackson, Tennessee 38301; Travis Robertson, 731-423-6984; email: RobertsonsRC@aol.com

SpeedZone Raceway & R/C Hobbies, Sweetwater, Tennessee 37874; Mike Henderson, 423-351-0055; email: speedzon@msn.com; web: www.speedzonraceway.com

W.O.W. Raceway, Beech Bluff, Tennessee 38313; Brad Jones, 731-427-1625; email: wowracer@bell-south.net; web: go.to/wowracing

TEXAS

215 Speedway, Abilene, Texas 79602; Clyde Gardner, (915) 673-2351

Al's Hobbies, San Antonio, Texas 78227; Alfonso Robles or Mark Beasley, 830-645-1050; email: alshobbies@usa.com; web: www.alshobbiesusa.com

Austex RC, Austin, Texas 78757; Michael, 512-458-2324; web: www.austexrc.com

B&B R/C Hobbies, Big Spring, Texas 79720; Walter Bumbulis, (915) 263-1790; email: b&brchobbies@apex2000.net

Big Mike's R/C Raceway, Longview, Texas 75604; Mike Sumrow, 903-297-7814

Drycreek Raceway, Greenville, Texas 75402; Micky Alphin, 903-527-5381; web: web.pulse.net/drycreek

Finishline Raceway, Hurst, Texas 76053; Damon Darnall, (972) 404-0463; email: Finishline@ev1.net; web: www.finishlinetrack.com

Hal's Hobby Raceway, El Paso, Texas 79936; (915) 591-2213; web: www.halshobbywarehouse.com

Hobby Center Race Track, Houston, Texas 77598; Issac Ben-Ezra, 281-488-8697; email: Hobbycenter@issacmodels.com; web: www.hobbycenter.cc

Hobbytown USA, San Antonio, Texas 78209; Clark, (210) 829-8697; fax (210) 829-8707

Indy R/C World, Garland, Texas 75041; Steve Webster, (972) 271-4844; fax (972) 271-4502; web: www.indyrcworld.net

Js Action R/C, Pasadena, Texas 77503; Jack Williams, 713-946-8888; email: jsactionrc.net; web: www.jsactionrc.com

K&M Racing, New Caney, Texas 77357; Brent Mahaffy, (281) 399-9777

M&M Hobby Center, Bellaire, Texas 77401; Meir Ben-Ezra, 713-661-7137; email: mandm@mhmhobby.com; web: www.mmhobby.com

MBRC, Dallas, Texas 75093; Mike Battelle; email: info@mbrc-racing.com; web: www.mbrc-racing.com

Mike's Hobby Shop Superstore & Raceway, Carrollton, Texas 75006, 972-242-4930; web: www.mikeshobbyshop.com

Reflex R/C, Houston, Texas 77055; Joseph Chen, (713) 464-4458; web: www.reflexrc.com

T&M Raceway R/C Drag Racing, Addison, Texas 75244; Marvin Jackson, (972) 416-0445; email: mjackson@tmraceway.com; web: www.tmraceway.com

T&T R/C Cars, Plano, Texas 75024; Joe Sullivan, (972) 633-2470

The Rollage, Greenville, Texas 75402; Guy Allen, (903) 883-0332; email: rollage2000@therollage.com; web: www.therollage.com

Thompsons RC Raceway, Lufkin, Texas 75901; Mark Thompson, (936) 637-0093

W.E.S. Hobby Race, Beaumont, Texas 77701; Marty Walker, (409) 839-4929

X-Treme Hobbies, Round Rock, Texas 78664; Jef Santos, (512) 310-0444 or (512) 388-3819

UTAH

Hobbie Stop Raceway, Riverdale, Utah; Todd Hamilton or Beazer Martin, (801) 622-0841

Intermountain R/C Raceway, Magna, Utah 84044; David Mott, 801-250-8303; email: rcmother1@aol.com; web: members.aol.com/rcmother1

Outback Raceway, Ogden, Utah 84404; Steve Brown or Beazer Martin, 801-726-3458; email: Steve@mmrc.com or Beazer@bibbs.com; web: www.tmmrc.com or www.beazershobbies.com

Vision Hobby, Orem, Utah 84057; Ken Rice, (801) 226-6226

VERMONT

Empire Hobbies Off-Road Raceway, Saint Albans, Vermont 05478; Scott or Jen, 877-446-2243; email: empirehobbies@surglobal.net; web: www.vtwebs.com/empirehobbies

R/C Toy Box Hobbies & Tracks LLC, East Haven, Vermont 05637; Raymond Richard, 802-467-8458; email: rctoybox@excite.com; web: myrctoybox.50megs.com

VIRGINIA

Brad's Hobbies, Staunton, Virginia 24401; Brad, (540) 885-3642; email: brads hobbies@erica.net

Brown Brothers Hobbies, Dumfries, Virginia 22026; Joe or Bob Brown, 703-221-5746; email: joe@bbhobbies.com; web: www.bbhbobbies.com

DRCW Raceway, Virginia Beach, Virginia 23454; Les Modlin, 757-340-6681; web: www.debbiesrcworld.com

Hampton Roads R/C Drag Club, Virginia Beach, Virginia 23452; Garry Nelson, 757-399-8645; email: Garry@gsdragracing.com; web: www.HRRCDC.com

KC's Radio Control & Repair, Lynchburg, Virginia 24503; Curtis or Kim Wright, (804) 384-8596

Linville Hobbies Raceway, Linville, Virginia 22834; Jerry Shenk, (540)833-2222; email: linvillehobbies@juno.com; web: www.linvillehobbies.com

Olde Towne Hobby Shoppe, Manassas, Virginia 20110; Jeff Gough, (703) 369-1197; web: www.oldeownhobby.com

Roanoke R/C Club, Salem, Virginia 24153; Chad Trent, 540-314-6257; email: roanokerc@aol.com; web: roanokerc.cjb.net

Shamroc Raceway, Winchester, Virginia 22601; Paul Wilson, 301-478-5355; web: www.shamroc.homestead.com/front-page.html

Stream Hobby Shop, Newport News, Virginia 23605; Rusty Kennedy, 757-591-0720; email: streamrc@aol.com; web: streamhobbyshop.com

The Tillyard, Dayton, Virginia 22821; Homer, 540-828-3476; email: homer@tillyard.com; web: www.tillyard.com

Thunder Road RC Speedway, Gordonsville, Virginia 22947; Robert Bingle, 434-296-6549; email: tripod@thunderoadrc.com; web: www.thunderoadrc.com

Tidewater R/C Speedway, Inc., Hampton, Virginia 23663; Jim Pike, Rob Marsette, Dave Pritchard, (757) 723-8927; email: zeeya31@hotmail.com

WASHINGTON

A-Main Raceway, Vancouver, Washington 98685; Monty Coleman, (360) 571-8404; web: www.amainraceway.com

Autosport

Burien Toyota R/C, Seattle, Washington 98148; Ray Meek, (800) 654-6456

CR/RS

Cedardale Raceway, Mount Vernon, Washington 98273; Craig, 360-755-9464

CR/RS

Fantasy World Raceway, Tacoma, Washington 98408; Dave Kleinman, (253) 473-6223; email: sales@fantasy-worldhobbies.com; web: www.fantasyworldhobbies.com

Autosport

Four Season R/C Racing, Olympia, Washington 98506; Gary and Sharon Brown, (360) 491-2430

Autosport

Hank Perry Raceway, Spokane, Washington 99203; Hal Hudson, 509-479-3503; email: halhudson@msn.com

Autosport

HobbyTown USA, Tacoma, Washington 98408; HobbyTown USA Shop, (253) 474-7787

Autosport

HobbyTown USA, Lynnwood, Washington 98037; Rich or Jamie, 425-774-0819; email: RHOBHBYTOWN@AOL.COM

Autosport

Paradise Raceway and Hobbies, Spokane, Washington 99207; Mark, 509-483-1843; email: paradisc@hotm.com; web: www.websealers.com/paradise

Autosport

Race City, Auburn, Washington 98002; Bruce, (253) 939-2515; email: auburn@pacifier.com

Autosport

Rain City RC Raceway, Mukilteo, Washington 98021; Pete or Debbie Cartwright, 425-438-2454; email: info@raincityraceway.com; web: www.raincityraceway.com

Autosport

Redmond Hobbies Raceway, Redmond, Washington 98052; Stan Ng, (425) 885-3639; email: info@redmondhobbies.com; web: redmondhobbies.com

Autosport

Schmidt's Auto Parts, Marysville, Washington 98271; Jon Failla, (360) 653-8838; web: www.schmidtsrccrceway.com

Autosport

Spokane Indoor Raceway, Spokane, Washington 99212; Brian Batch, 509-487-2122

Autosport

Tacoma R/C Raceway, Tacoma, Washington 98406; Scott Brown, (253) 565-1935; web: www.tacomarcraceway.com

Autosport

West Coast Hobby & Raceway, Richland, Washington 99352; Darren Shank, (509) 375-4995

Autosport

WEST VIRGINIA

Burr Fab R.C. Raceway, West Union, West Virginia 26456; Mark Travis, 304-873-2487; email: burrhouse1@cs.com

Autosport

Fulton's R/C Raceway, Wheeling, West Virginia 26003; James Fulton, (304) 233-5355

Autosport

Mountwood Raceway, Vienna, West Virginia 26105; Tom Allen, 304-295-3234; email: ryan@ovrccc.com; web: www.ovrccc.com

Autosport

Quiet Dell Raceway, Fairmont, West Virginia 26554; Darris, (304) 366-1441; email: Tateracing@aol.com

Autosport

WISCONSIN

ABC R/C Inc & Raceway, Waukesha, Wisconsin 53186; Dick Mathiesen, 262-542-1245; email: Help@abcrchobby.com; web: www.abcrchobby.com

Autosport

Best's Hobbies, Appleton, Wisconsin 54914; Peggy, 920-734-5244; email: appletonrcc@hotmail.com; web: www.besthobbies.com

Autosport

Gary's Hobby Center, Racine, Wisconsin 53403; Bill Phalen, 262-554-8884

Autosport

Hobbytown USA - Revolution Raceway, Sheboygan, Wisconsin 53081; Kenny, (920) 452-0801; web: www.hobbytownsheb.com

Autosport

KDM Raceway, Abbotstford, Wisconsin 54405; Kevin Michlig, 715-223-4414; email: kdmhobby@pcpro.net; web: kdmhobby.homestead.com/kdmhobby.html

Autosport

MARCCA Raceways, Monticello, Wisconsin 53570, 608-243-1778; email: asylumrcc@yahoo.com; web: www.marcca.com

Autosport

Mid-West Tri-Clone/Tri-Clone Off-Road, West Bend, Wisconsin 53095; Dave Hilpert, 262-334-0429 or 262-626-2238; email: mwtoc@hnet.com; web: www.triclone.com

Autosport

Pro-Star Racing, Green Bay, Wisconsin 54301; Chuck or Terry, (920) 494-1233 or (920) 469-5566

Autosport

S&N's Trackside Hobbies and Raceway, Milwaukee, Wisconsin 53005; Scott Ernst, 262-783-4699; email: sernst@trackside.com; web: www.trackside.com

Autosport

The Shorthalf Raceway, Eau Claire, Wisconsin 54701; Scott Schoettle, 715-838-8350; email: Scottschoettle@mcleodusa.net

Autosport

WYOMING

Xtreme Hobbies Raceway, Gillette, Wyoming 82718; Krieg Balls, 307-682-6077; email: xtreme@vncn.com

Autosport

ARGENTINA

Circito R/C Lobos, Lobos, Buenos Aires 7240; Roberto Bruce, 54-02227-422905; email: rlobos@yahoo.com; web: www.rlobos.8m.com

Autosport

Circuit M.R. Models, Buenos Aires 1428; Maximiliano Robalos, 54 11 4557 1000, fax 4780 1677; email: info@kyosho-argentina.com.ar; web: www.kyosho-argentina.com.ar

Autosport

Club A. Velez Sarsfield, Buenos Aires, Jorge Herrero, 54-01-658-5851

Autosport

AUSTRALIA

A.C.T. Model Car Racing Club, Wanniansa, ACT; Gary Davey, 61-6-2871411

Autosport

A.C.T. Remote Control Car Club, Kambah, ACT; Rob Jorgensen, 61-2-6231-9925; email: bjorgo@isr.gov.au; web: users.bigpond.net.au/grj/actrccc.html

Autosport

Aubry R/C Car Club, Aubry, New South Wales 2640; Ron Langman, 060-247-128

Autosport

Brisbane Dirt Racing, Brisbane, Queensland 4053; Jeff Chandler, 07 3355 7476, 041 878 3201; email: smeg666@bigpond.com; web: www.gofast.to/race

Autosport

Canberra Off-Road Model Car Club, Narrabundah, ACT 2604; Graham Brown, 61-6-241-3070

Autosport

Carine R/C Model Car Club, Inc., Greenwood, Western Australia; David Werner, 61-418922966

Autosport

Castle Hill Radio Control Off Road Car Club, Castle Hill, New South Wales 2754; Peter Ellis, 0412 257 353; email: chrcrcc@nextcentury.com.au; web: www2.nextcentury.com.au/chrcrcc

Autosport

Central Coast ORCCC, Bateau Bay, New South Wales 2261; Peter J. Knight, 61-43-693-698

Autosport

Illawarra RCECC, Albion Park Rail, New South Wales 2527; Mel or Andrew, 042-714-683

Autosport

Lakeside R/C Racing Car Club, Lansvale, New South Wales 2166; R. Bartolotti, 62-2-907-9800

Autosport

Melton Electric Circuit Car Association, Melton, VIC 3337; Arthur Joslin, 61-3-9747-8805

Autosport

Monaro Radio Control Car Club, Queanbeyan, New South Wales 2902; Graham Brown, 02 6241 3070; email: gbrown@webone.com.au; web: www.webone.com.au/~gbrown/mrccc/index.html

Autosport

Penfield Park, Adelaide, South Australia 5108; Trevor U'New South Wales 08th, (618) 8289-5010

Autosport

R.C. Speedway, Newcastle, New South Wales 2300; Andrew Dillon-Smith, 02-49265966

Autosport

TFTT - Templestowe Flat Track Racers, Templestowe, Victoria 3106; Nigel George, see website; email: tftt@imagelife.net; web: drive.to/tftt

Autosport

The Bayside Raceway, Brisbane, Queensland 4178; Nigel Bell, 07 3893 1864; email: mwr1@dingoblue.net.au

Autosport

Victorian Radio Control Drag Racing Association, Melbourne, VIC 3940; John de Tracy, 03 59820459; email: bjmo1@hotmail.com; web: www.ozemail.com.au/~john59/index.html

Autosport

Wee Waa's Offroad RC, Burren Junction, New South Wales 2386; Shane, 61-02-6796-1339

Autosport

Wodonga R/C Car Club, Wodonga, VIC 3690; Paul Townsend, 02-6056-0706; email: townsend175@ozemail.com.au

Autosport

AUSTRIA

RMC-Wien, Vienna A-1220; Herbert Holze/Martin Hrzak, +43-664-4730376

Autosport

BARBADOS, WEST INDIES

R.O.A.R. (Radio Operated Auto Racing), St. Michael; Marva Clarke, (246) 427-3907

Autosport

BELGIUM

ATR-Alka-Tele-Racing, Limburg; Aiken, 0032-11-25-49-03

Autosport

MBV-Kampenhout, Kampenhout B1910; Frank Mostrey, 0-16-65-75-18

Autosport

Model Racing Club Oudenaarde (MRCO), 9700 Oudenaarde; Nicky Delmote, and fax: 32 55 30 36 25; email: mrcoc_racing@hotmail.com; web: mrcoc-racing.tripod.com

Autosport

MRCZ, De Burg; Montie, 75-71-63

Autosport

R.C.R., Retie 2470; A. Eelen, 32-14-379685

Autosport

BRAZIL

AGARC Associaçao Goiana de Automodelismo Radiocontrolado, Aparecida de Goiania, GO 74980-070; Zeca, Carol, Warner or Rodrigo, 062 9979 9009; email: zeca.net@terra.com.br

Autosport

Amoc Cassociacao de Modelismo B. Cambario, Bal Cambario, South Carolina 88.330-000; Leo Cesar, (047) 366-0001

Autosport

Brasilia R/C Motor Circuit, Brasilia, DF 70000; Alexandre (Alex), 55-061-273-7205

Autosport

C.A.A.R. Curitiba Associacao de Automodelismo Radiocontrolado, Curitiba, Puerto Rico 82650-530; Ronaldo Assumpcao, 55-41-354-2804

Autosport

Electric Car Club R/C Santos, Santos, Sao Paulo 11065-001; Estevam or Arnaldo, 55-013-232-2536

Autosport

Hobby Center, Brasilia, DF 70.273, 061-242-0488

Autosport

Hobby Planet Racing Club, Campinas, Sao Paulo 13091901; Daniel, Helio, Luciano, 019 258 2768

Autosport

Jungle Drive, Rio de Janeiro, PB 21940-490; Paulo Brito, (021) 396-0851 or (021) 393-7449

Autosport

Off Roaders, Sao Paulo, CEP 05640; Waldir Ielpo, (055) 011-260-5628; fax (055) 011-831-4931

Autosport

Mini-Z Hobby Shop, Markham, Ontario L3R 0W4; Brian Pong, (905)940-0898; email: info@minizhobbyshop.com; web: www.minizhobbyshop.com

Autosport

Prince George Radio Controlled Car Club, Prince George, British Columbia V2M 5R9; Doug Waller, 250-561-0035

Autosport

CANADA

ATN, Saint-Jean-Baptiste-de-Nicolet, Quebec J3T 1E5; Louis Durand, (819) 293-6097; email: durand@sogetel.net; web: public.sogtel.net/durand/

Autosport

Battlefield R/C Raceway, Cobourg, Ontario K9A 2G3; Tony Hopcraft, (905)373-8373; email: tonyhopcraft@yahoo.com; web: www.geocities.com/battlefield_rc_raceway/

Autosport

C.A.R.C.A.R., Calgary; Simon Smith, (403) 280-9040; web: www.drive.to/carcar

Autosport

Cactus Speedway, Ruthven, Ontario N0P 2G0; Terry Torell, (519) 735-7122; email: osthunder@sympatico.ca; web: www.mnsi.net/~glenn/sparc.htm

Autosport

Cam R/C, Coquitlam, British Columbia V3E 1K9; Roger Brown, 604-945-3888

Autosport

Circuit J.C., St. Polycarpe, Quebec J0P 1X0; Jean Castellon, 450-265-3675

Autosport

Circuit Teleguide ST Roch, ST Roch De L' Achigan, Quebec J0K 3H0; Gerald Beauchamp, 450-588-4254; email: gedoroam@colba.net; web: www.grcsr.com

Autosport

Copetown Raceway, Copetown, Ontario; Adam Filipowicz; email: adamfilip@home.com; web: copetown-raceway.8k.com

Autosport

Dynamic Hobbies, Nepean, Ontario K2E7S4; Fred Zuffelt, (613) 225-9634; web: www.members.home.net/rcot-tawa

Autosport

HobbyHobby P.L.R.C., Mississauga, Ontario L5M 1K8; Tom Bakonyi, 905-858-7978; email: info@hobbyhobby.com; web: www.hobbyhobby.com

Autosport

Honda House Motor Speedway, Chatham, Ontario N7M 1P9; John Elliot, (519) 354-5530

Autosport

IROCC, Victoria, British Columbia V9B 5W9; Daryl Jones, (250) 478-8013; email: djoness@shaw.ca

Autosport

Johns Jump & Grind R/C Track, Waterville, Nova Scotia B0P 1V0; John Egan, 902-538-8920; email: john.egan@ns.sympatico.ca; web: www.jagrc.com

Autosport

J-T International Raceway, Napanee, Ontario K7R 8A1; N. O'Neill, (613) 354-0099

Autosport

Kays Hobbies R/C Raceway, Moorefield, Ontario N0G 2K0; Doug Kay, 519-638-9990; email: dougk@golden.net; web: www.kayshobbies.place.cc

Autosport

Leading Edge R/C Speedway, Kingston, Ontario K7M 3Y5; Mike and Tony Daicar, 613-389-4878

Autosport

Mid-Canada R/C Auto Racing, Winnipeg, Manitoba R2J 4E6; Jason McBride, 204-231-3324; email: hjmcb@escape.ca; web: www.geocities.com/midcanadarcautoracing

Autosport

Miniatures & Passions, Ste. Therese, Quebec J7E 2B4; Gilles Lachance, (450) 979-7989

Autosport

Mini-Z Hobby Shop, Markham, Ontario L3R 0W4; Brian Pong, (905)940-0898; email: info@minizhobbyshop.com; web: www.minizhobbyshop.com

Autosport

Prince George Radio Controlled Car Club, Prince George, British Columbia V2M 5R9; Doug Waller, 250-561-0035

Autosport

R/C Champ Raceway, Scarborough, Ontario M1H 3A4; Ben, Matthew or Louie, (416) 289-8717; web: www.rccchamp.com


R/C Fanatic, Charlesbourg, Quebec G1G 3Y4, Marc Page (Club President), 418-265-2678; email: info@rctfanatic.com; web: www.rctfanatic.com


Recreation R/C Raceway, Prince George, British Columbia; Doug Waller, (604) 561-0035

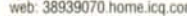

Steeltown Speedway, Binbrook, Ontario L0R 1C0; Trevor Harrison, 905-692-3407 (ask for Trevor); email: the_prodigy@znetonebox.com; web: www.geocities.com/s_speedway


Sudbury Organized Auto Racing, Val Caron, Ontario P3E 1E6; Brad Peacock, 705-897-1435 (Brad); email: soarsudbury1@hotmail.com


The All New R.C. World, Hamilton, Ontario L0R 1W0; Dave, Larry or Brian, (905) 765-2301 or (905) 333-3297


Vancouver R/C Road Racers, Coquitlam, British Columbia V3E 1K9; Roger Brown, (604) 945-3888


CHILE

Nico Prohens Off/On Roaders, Ovalle, 4 Region 1; Nicolas Prohens, (56) 53-711579; email: nprohens@entelchile.net; web: 38939070.home.icq.com/


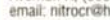
OFF/ON ROADERS, Santiago, Region Metropolitana 1; Mauricio Wetter Ferrer, (56) 09-8404174; email: mwetter@entelchile.net; web: 38939070.home.icq.com/


COLOMBIA

Club De Automodelismo Colombiano, Sanatafe De Bogota D.C., Bogota; Jorge Delgado, 1-6130588


Garoso Raceway, Cucuta; Gabriel Rodriguez, 975-751892


COSTA RICA

Club de Automodelismo RC10 Costa Rica, San Jose, San Jose; Osvaldo Averhoff A, (506) 2862353; email: nitrocr@hotmail.com


Hobbymania, Hispanidad San Pedro, Montes de Oca; Randall Jimenez, 506-280-9078; email: hobbymanias-tore@hotmail.com; web: www.hobbymanias.com


CYPRUS

Racing Model Club, Nicosia; Andrea Sotiriou, 493186; fax 493229


DENMARK

Brondby Motor Club, Brondby 2605; Soren Boy Holst, 45-36-472-462


Holstebro R/C Buggy Club, Holstebro 2600; Michael Brusholt, 45-97-412-734


Klub 144 Raceway, Lyngby 2800; Henrik Carstens, 45-42-88-3691


Rainbow Raceway, Copenhagen 2600; P. Christiansen, 45-52-848-504


Thor Minirace Odense, Odense N 5240; Ulrich Russussen, 45-65-303-707

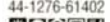

DOMINICAN REPUBLIC

Adoca R/C Speedway, Santo Domingo, (809) 220-5266


La Barranquita R/C International Speedway, Santiago, (809) 582-2303


ENGLAND

Chessington Radio Car Club, Worcester Park, Surrey; Ian Spiller, 0252-20657


Hampshire Racing Center, Basingstoke, Hampshire; Tony Eudola, 44-1276-61402


Hinckley RCCC, Hinckley, Leicestershire; Bruce, 01455-890580


Snetterton Market Model Car Club, Norwich, Hampshire NR16 2JU; Lee Shore, 01760 724857; email: kekez-zai@fsmail.net; web: www.wheelspins.co.uk


Worcester Model Car Club, St. John's, Worcester WR2 6Q9; Mr. Hardy


FRANCE

Auto Electron, Limoges 87000; M. Boudou, 55 062763


Auto Model Club de l'ouest, Lojehet 29470; Peuzat Michel, 98071764


Crame Ronca, Mons el Baroeul; Michael Hondekyn, 33-20042755


CSRM, Lyon 69009; Pierre-Yves Monfroy, 06 78880852


Lorgies Bolides, Lorgies 62840; Hourdequin Sabine

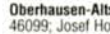

GERMANY

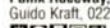
Dreykorn Raceway, Ulft 91207; Hermann Hensel, 09123-81457


MAC Zweibruecken, Hueffler 66909; Matthew Bailey, 011-49-6384-1388; email: matthew_w_bailey@hotmail.com; web: www.geocities.com/matthew_w_bailey

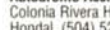

MC Koln, Worringen 50769; Ralf Habel, 02733-477493


Mini Car Club Dortmund, Dortmund 4600; Roland Schwan, 0231/213609


Oberhausen-Altstadt, Oberhausen 46099; Josef Holi, 0208-403676


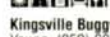
Panik Raceway, Troisdorf 53844; Guido Kraft, 0224-400259


HONDURAS

Autodromo Accion, San Pedro Sula; Colonia Rivera Hernandez; Eduardo Hondal, (504) 52-2061


HONG KONG

H.K.R.C. Model Car Racing Club, Hong Kong; Alex Chan, (852) 659-2822


Kingsville Buggy Arena, Shatin; Pak Yeung, (852) 607-0828


INDONESIA

Abadi Circuit, Bandung, Jawa Barat 40141; Adi Darmawan, 62-22-2012250; email: darmawaa@bdg.cen-trin.net.id


Ancoi, Jakarta, ACT 14350; Andre Supriyana, 62 21 6506040; email: andre@bcn.net.id; web: www.auvis.com/ja


Jakarta International Twin Circuit, Oki Jaya, Jakarta; Fayakhun Andriadi, 6221-751243; email: fayakhun@soon.com


Karinda Off-Road R/C Car Model Circuit, Jakarta-Selatan 12440; Wivied W. Soedarmadi, 62-21-7900878

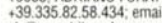

Pondok Cabcircut, JL. Kunir No. 83, Jakarta; Ali Agus Salim, 7403568-9; fax 7491533


ISRAEL

Ircca Off-Road, Rahanana; Yaron Zafris, (972) 030549937


Nahshoneat, Haifa 32809; Golan Levy, (972) 039386444 or (972) 04231252


ITALY

AF MODELS RINGS, COLLEGNO, ACT 10093; ADRIANO FORATO, +39.335.82.58.434; email: afmodels@r-net.it; web: www.afmodels.com


JAPAN

Kadena R/C Car Club, APO, AP 96367; Ron Nason, 011-81-611-733-1334; email: Ron_Nason@hotmail.com; web: home.attm.net.jp/b/Carmen_Nason/home.htm


Xiwakuni R/C Track, FPO AP 96310-0978; David T. Eck, 81-6117-53-3662


Yokota R/C Racers, APO, AP 96326-0034; John Baker, 90-001-81-31175-7-6471; email: a4jb@yta.attm.net.jp


Zama Off-Road Raceway, APO AP 96338; Ken Campbell, 81-3117-63-8478

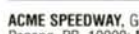

KUWAIT

Inferno DX 4WD Track, Ahadi 61002; Youssef Acqatari


LEBANON

Wild Willy RCC, Beirut, 00961-4-403751


MALAYSIA

ACME SPEEDWAY, Georgetown, Penang, PB 10000; MOEY CHEE CHIONG, 604-2613175 & 6012-4189388; email: s_jamm@hotmail.com


Jump Square Arena, Selangor; Thomson Chong, (603) 656-2513


Niko Sales & Service Centre, Johor Bahru; Niko Cheng, (607) 234-3615; email: niko3@pd.jaring.my; web: www.niko.com.my


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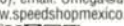
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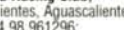
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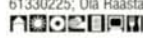

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- ☐ Asphalt
- ☐ Minis & Micros

- ☐ On-site hobby shop
- ☐ AC power
- ☐ Automatic lap-counting
- ☐ Food available

KEY TO SYMBOLS

- | | |
|-----------|--------------------|
| Indoor | Concrete |
| Outdoor | Asphalt |
| Off-road | Minis & Micros |
| On-road | On-site hobby shop |
| Oval | AC power |
| Dirt oval | Auto lap counting |
| Carpet | Food available |

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You can link Combat Fields to give your GunWalker more room to stroll.

If your idea of a fighting robot is closer to Gundam and RoboTech than it is to a washing machine wielding a hedge clipper, Kyosho has just the RC battler for you: the GunWalker. Anime legend Kazutaka Miyatake of Macross fame designed the flat-footed, armor-clad, metal-looking monster that stands 8 inches high (not including its antenna) and really walks under RC control. The secret is its "Magna-Traction" system and the included "Combat Field"—a fancy name for a steel plate. The GunWalker is designated as a "Type 01 Main Battle Footmover"; electromagnets in its feet grip the Combat Field for an authentic robo-stride with forward and reverse and left and right control. We had a good time testing the big 'bot; see for yourself.



Here's the GunWalker's secret: electromagnetic feet! They aren't strong enough to let the robot scale a refrigerator, but they are pretty powerful.



Above: this video-game-style controller makes the magic happen. The button under the "L/R" controls doesn't do anything—yet. The instructions show an extra plug in the robot's receiver, but no mention is made of what the optional component is or does!



Left: you gotta have weapons. The GunWalker can wield a "Type 01 Machine Pistol" or a "Type 02 Multipurpose Gun" (you mean it can do more than shoot stuff?). There's even a king-size bayonet.

TAKING A WALK

The GunWalker moves out with a satisfying ker-chunk as each leg rises and falls heavily on the Combat Field, and it turns with a pirouette on its "heels"—very military. The Combat Field is a little small; you'll definitely have more fun if you hook up an extra field or two for more roaming room. Your battles with other GunWalkers will be limited to shoving matches, since all the robot can do is walk, but it's still pretty cool. In addition to more RC features, we wish the GunWalker was more affordable; \$160 seems steep for an RC novelty item. But if you're really into model robots, it's actually a steal; the finished robot looks as if you spent hours painting and detailing it. It's a real conversation piece for Macross fans, and it doesn't just sit on the shelf; it walks! ■



He doesn't actually fit into the robot, but Kyosho does supply a pilot figure. He doesn't look quite as tough as the GunWalker, though

CAN YOU BELIEVE WHAT HAPPENED ON "WILL & GRACE" THIS WEEK?!



I FIGHT IN THE DESERT!

I FIGHT IN THE JUNGLE!

UM...I'M MALL SECURITY!

Kyosho paints and weathers the GunWalker for you; all you have to do is a little snap- and glue-together assembly of the arms, hands and a few detail pieces. When you've finished, the arms can be posed, action-figure-style.

WIN A KYOSHO GunWalker!

Which movie robots can be credited with these quotes? First person to email the correct answers to backlot@airage.com wins the GunWalker.

1. "Curse my metal body! I was too late!"
2. "Your clothes; give them to me."
3. "No Atom. I Superman!"
4. "Dead or alive, you're coming with me."
5. "Not bad, for a human."

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